TELEPHONE ENGINEER and MANAGEMENT

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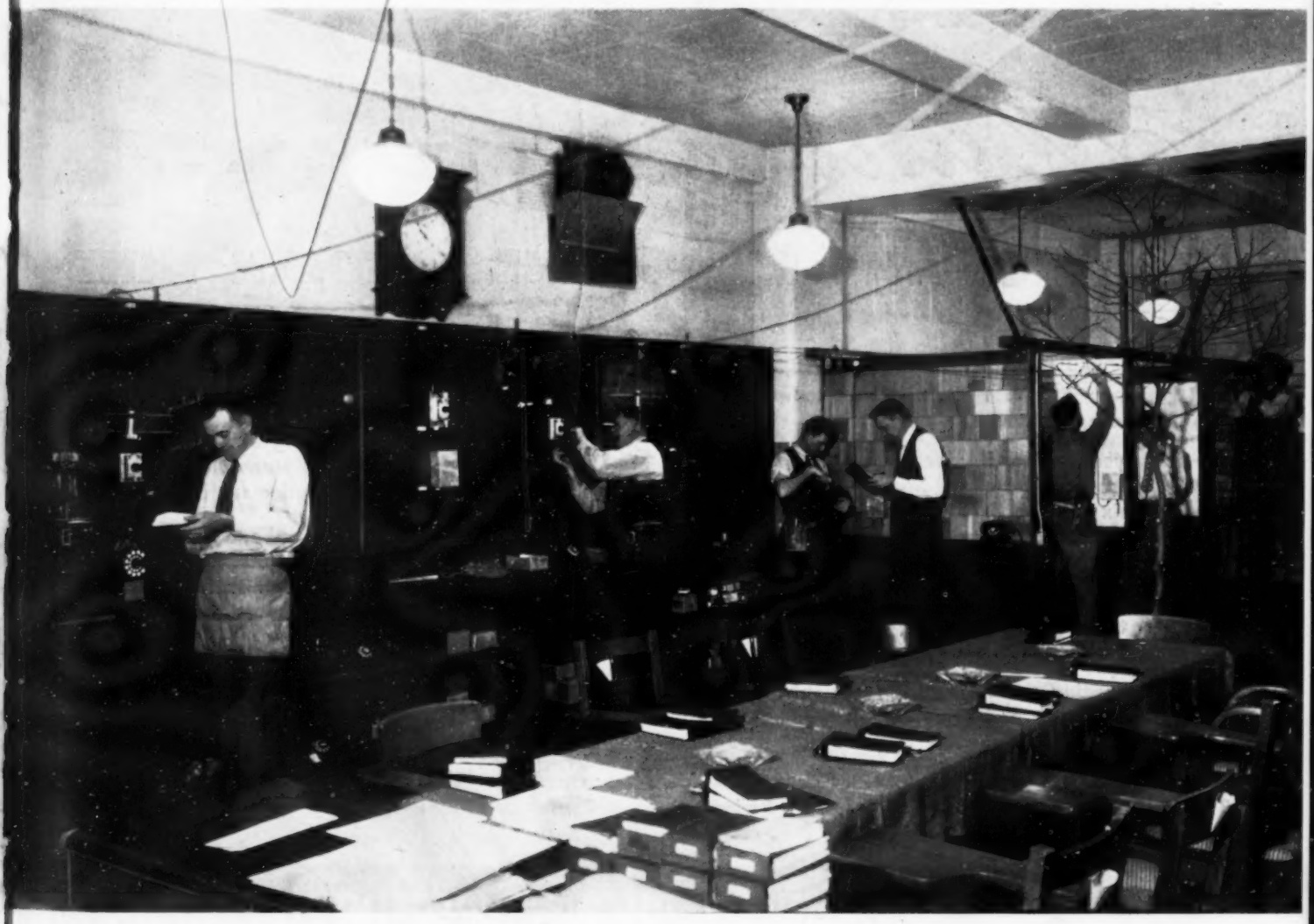
TECHNOLOGY DEPARTMENT



MARCH, 1949

Española NEW MEXICO . . .

HEART OF THE RIO GRANDE INDIAN LAND

Three great civilizations — Indian, Spanish, and Anglo — have made Espanola and the surrounding country rich in color and historical significance.

Two score years before the founding of Jamestown, the first American capital of old Spain was established at San Juan, six miles north of Espanola, by Onate, who led three hundred settlers into the Rio Grande Valley.

To wander, today, through the small mountain villages in the Espanola area is to turn the calendar back 200 years, for they still reflect the intermingled cultures of the Indian and Spanish civilizations.

Excellent hunting and fishing, the ancient cliff dwellings, living pueblos and other Indian landmarks, plus Espanola's dry, mile-high climate, have made this community a mecca for vacationers.

The establishment of the Atomic Research Project at Los Alamos near Espanola has placed increased demands for service on the Espanola Telephone Company, which serves the area. As the number of stations in service increases, the problem of issuing accurate, attractive directories becomes increasingly complex. It becomes a job for a specialized organization such as ours.

Through our experience with telephone companies, both large and small, we have developed a flexible directory plan which was effectively adapted to meet the needs of Espanola, as it has been for more than 1200 other American cities and towns.

Your directory procedure may, or may not be complicated by the same factors which affected Espanola. But whatever the problem, we offer as a solution: accurate, regularly scheduled, attractive directories, which will produce appreciable increases in net advertising revenue for your company.

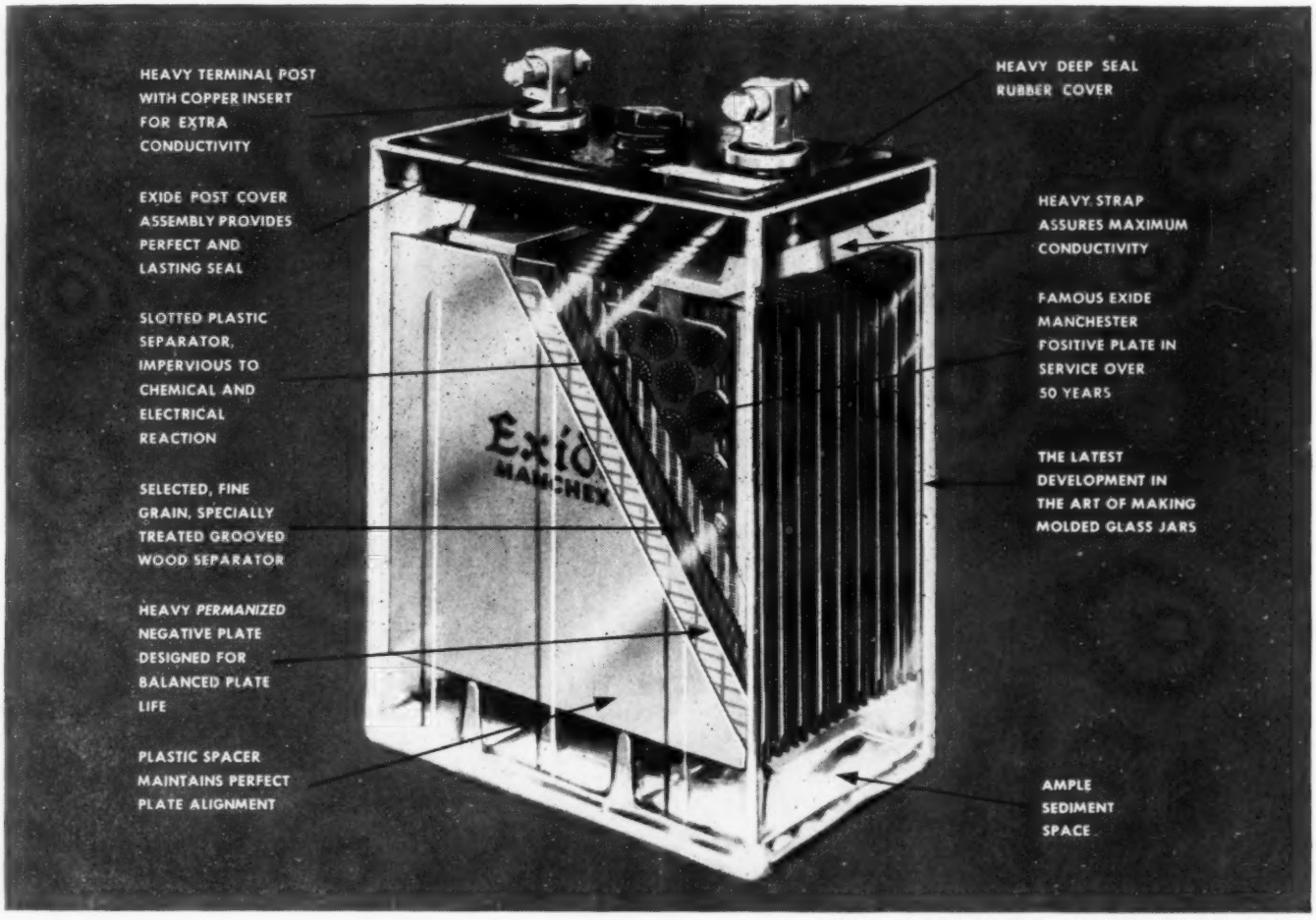
GENERAL TELEPHONE DIRECTORY COMPANY

Eastern Office: 185 North Wabash Avenue, Chicago 1, Illinois—Telephone STate 2-5478

Western Office: Press-Telegram Building, Long Beach 12, California—Telephone 6-7221

NEW-EXIDE-MANCHEX battery

for dependable TELEPHONE SERVICE


HEAVY TERMINAL POST WITH COPPER INSERT FOR EXTRA CONDUCTIVITY
EXIDE POST COVER ASSEMBLY PROVIDES PERFECT AND LASTING SEAL
SLOTTED PLASTIC SEPARATOR, IMPERVIOUS TO CHEMICAL AND ELECTRICAL REACTION
SELECTED, FINE GRAIN, SPECIALLY TREATED GROOVED WOOD SEPARATOR
HEAVY PERMANIZED NEGATIVE PLATE DESIGNED FOR BALANCED PLATE LIFE
PLASTIC SPACER MAINTAINS PERFECT PLATE ALIGNMENT
HEAVY DEEP SEAL RUBBER COVER
HEAVY STRAP ASSURES MAXIMUM CONDUCTIVITY
FAMOUS EXIDE MANCHESTER POSITIVE PLATE IN SERVICE OVER 50 YEARS
THE LATEST DEVELOPMENT IN THE ART OF MAKING MOLDED GLASS JARS
AMPLE SEDIMENT SPACE
Exide
MANCHEX

"Exide" and "Permanized" *Reg. Trade-Marks U. S. Pat. Off.*

One of its many exclusive features is the famous MANCHESTER POSITIVE PLATES with their unique lead button construction. The buttons—rolled strips of corrugated soft lead—are pressed into holes of the lead-antimony grid. Forming action expands the buttons and locks them securely in place. Only a comparatively small portion of the total lead is formed initially into active material . . . the balance is available for gradual conversion in service.

THE PERMANIZED NEGATIVE PLATES are constructed of a lead-antimony grid, or framework, with a series of vertical ribs connected by short horizontal bars. Bars are flush with plate surface . . . extend only part way through the plate . . . are staggered on opposite sides. The active material . . . sponge lead . . . is formed of vertical strips or ribbons that extend from top to bottom of the plate between the vertical ribs and is locked in place by the horizontal bars.

For dependability, long life and economy, use the EXIDE-MANCHEX BATTERY for all telephone battery requirements.

LONG LIFE...LOW MAINTENANCE COST...IMPROVED ELECTRICAL CHARACTERISTICS...INCREASED POWER (watt) OUTPUT PER UNIT OF SPACE...LESS WEIGHT PER AMPERE HOUR OUTPUT...ATTRACTIVE INSTALLATION

Exide
BATTERIES

1888 — Dependable Batteries for 61 Years — 1949

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • *Exide Batteries of Canada, Limited, Toronto*

IT SEEMS TO US . . .

JACK HALEY of the Texas Telephone Association and LOU EVENSON of the Kentucky Independent Telephone Association have certainly built up their conventions to be held during March. Although the Texans outnumber the Independents in Kentucky the latter group more than makes up the difference in their enthusiasm. This in itself is something out of the ordinary as few people can out-talk or outcheer a Texan when he is in a selling mood.

• • •

Our former Associate Editor MRS. FAY RATTENBURY is now a reporter-columnist of the DeLand (Fla.) Sun News. Mr. Rattenbury is City Manager of DeLand. If your memory is short Faye Rattenbury was the lady with the TELEPHONE ENGINEER camera at the USITA meetings during wartime.

• • •

Cheers to Acting Editor M. S. LEACH and his staff of the Illinois Commercial Telephone Company News on their front cover of the February issue. The entire publication is well edited and very informative.

• • •

Our staff, too, are now busy on our April Spring Construction Number of TELEPHONE ENGINEER & MANAGEMENT. We think it will be one of the best issues on the subject we have ever produced. There will be plenty information that should be filed for continued use. If you will need extra copies make your reservation immediately.

• • •

Now that television is sweeping the country many telephone men have been consulting CHESTER RUTH of Cook Electric Co., Chicago. His son is a television engineer and is a chip off the old block. Cook Electric has an experimental television broadcasting station in their Chicago Laboratories and that gives Chet another reason to be well versed in the latest things in television.

The National Telephone Magazine

TELEPHONE ENGINEER and MANAGEMENT

MARCH, 1949 **VOL. 53, NUMBER 3**

Editor, RAY W. SMITH • *Advertising Director*, ROY F. SMITH
Managing Editor, JOHN G. REYNOLDS • *Promotion Manager*, DON C. SORENSON
Washington Bureau, ROLAND C. DAVIES *and* FRED HENCK
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COVER: Installer students of Chesapeake & Potomac Telephone Company of Virginia practice telephone installation on set resembling actual job conditions.

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Kills 75% of all roots *permanently*...

AS PROVED IN COMMERCIAL OPERATIONS

BEFORE: A Davey crew at work spraying on an osage orange hedge.

AFTER: One year later—the results speak for themselves.

Davey Brush Control is the most effective, most economical method of keeping your right of way open. Years of success prove that Davey Chemicals kill most living growth to the ground and kill a large percentage of roots of existing stands of mixed species. It does not sterilize the soil. A mantle of green vegetation, which prevents erosion, will appear the year after spraying.

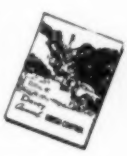
The expense of the initial application compares favorably with hand cutting. A large percentage of saving in maintenance can be realized the following years.

Davey Chemicals must be applied after the leaves are well developed and before fall coloring begins. Because of this limited season, may we suggest that you write your Davey representative, or direct to Kent for information regarding their spraying time schedule in your area. Scarcity of chemicals, manpower and equipment also make careful, advanced planning of work a necessity.

MAIL TO

THE DAVEY TREE EXPERT CO. · KENT 8, OHIO

FREE! Send me your free illustrated booklet giving the complete story of the Davey Chemical Brush Control Service.



I am interested in seeing any right of way located near me that has been sprayed by Davey. Send me its location and history.

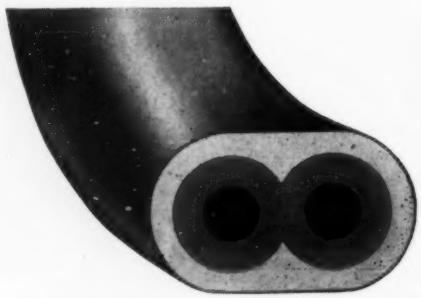
Name .....

Address .....

City ..... *State* .....

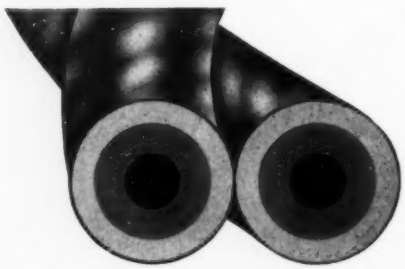
DROP IT WITH

Neotel



Type GP—Parallel
Type GRP—Parallel, Reinforced

A NEW DROP WIRE *jacketed with* DU PONT NEOPRENE



Type GT—Twisted Pair
Type GTR—Twisted Pair, Reinforced

Here's the drop wire you have asked for—the new Neoprene-jacketed NEOTEL, made exclusively for Automatic Electric by General Cable Corporation. NEOTEL is available now in twisted or parallel pair, in four different types, each with 17-gauge conductors. NEOTEL is impervious to oils and greases, has excellent abrasive and weather resistance qualities and exceeds insulation requirements by a wide margin of safety. Try Neoprene-jacketed NEOTEL the next time you order drop wire.

CHOOSE FROM 3 Great Drop Wires

MONOTYPE . . . Rubber-Insulated
GENCATEL . . . Polyethylene-Insulated
NEOTEL . . . Neoprene-Jacketed

Made by GENERAL CABLE CORPORATION

RECOMMENDED AND DISTRIBUTED EXCLUSIVELY BY

AUTOMATIC ELECTRIC SALES CORPORATION

1033 WEST VAN BUREN STREET, CHICAGO 7, ILLINOIS

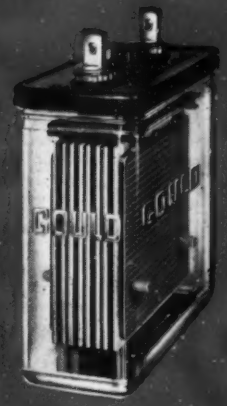
Only GOULD Has It!

A modern research laboratory with pilot manufacturing plant where advance-design batteries are constantly created—and proved before production.

The Spectrograph Densitometer—used in battery research by Gould—makes analyses of materials in minutes revealing any trace of impurity that reduces battery life.

The Spectrograph Densitometer is the most modern tool of analysis. It makes sure that every shipment of raw materials received at Gould's plants conforms to Gould's own exacting specifications before going into production . . . that you get batteries with predictable performance and longer life. Gould has taken the guesswork out of battery-making.

Every component part of every Gould battery is scientifically right. Specify GOULD—FOR FIFTY YEARS THE CHOICE OF ENGINEERS.



Gould Pioneer—
The Aristocrat of Stationary Batteries!

GOULD

STORAGE BATTERY CORPORATION

Including the Storage-Battery Division of Philco Corporation

TRENTON 7, NEW JERSEY

Always Use Gould Automobile and Truck Batteries

Make Every Gas Station A "PAY" Station . . . .

with Autelco-Gray PAYSTATIONS

One of the "60" series of Autelco-Gray Paystations ready to increase your earnings.

Every gasoline filling station in your territory is a source of potential extra telephone revenue. You can get this added income by installing Autelco-Gray Paystations wherever these opportunities occur—on the highways, in business districts or in neighborhood areas. There is an Autelco-Gray Paystation to meet every requirement. Post-pay or prepay models in wall type, shelf type or the "60" Series booth type will soon pay out their initial cost. Thereafter, for every paystation location you have secured, you are assured steady, constant extra income. Get the details on the entire Autelco-Gray line in the new Paystation catalog ready for distribution soon. Ask for Catalog No. 4078A.

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems

Makers of Telephone, Signaling and Communication Apparatus . . Electrical Engineers, Designers and Consultants

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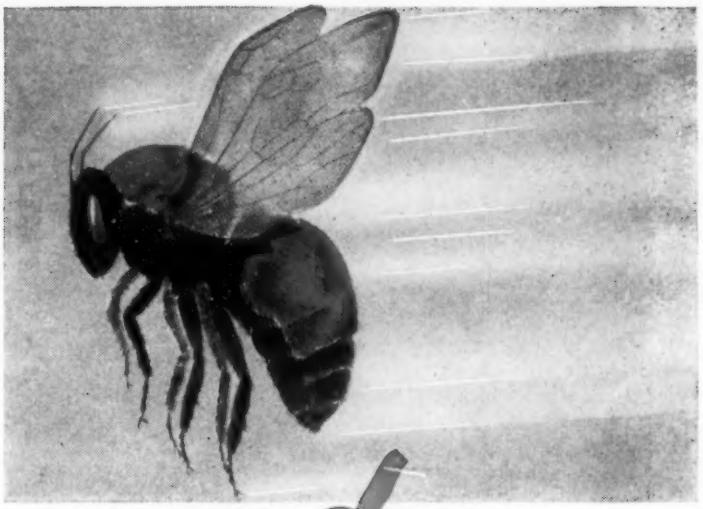
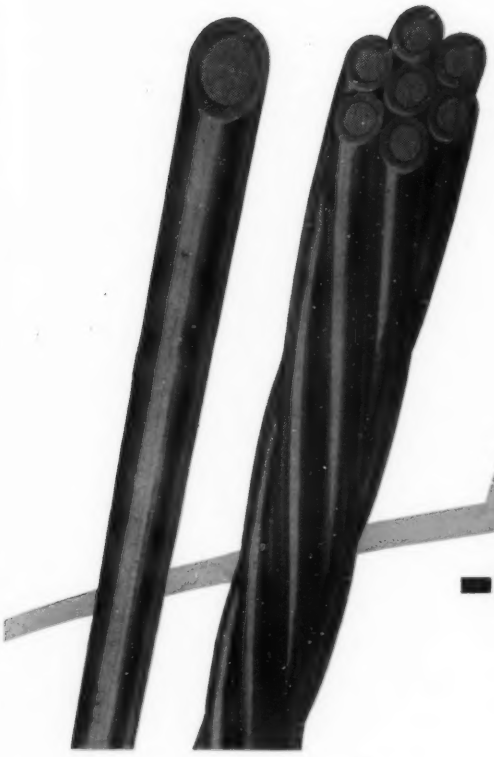
Export Distributors: INTERNATIONAL AUTOMATIC ELECTRIC CORPORATION

AUTHORIZED AGENTS AND DISTRIBUTORS FOR AUTELCO-GRAY PAYSTATIONS

Automatic Electric Sales Corporation . . . Graybar Electric Company . . . Kellogg Switchboard & Supply Company . . . Leich Sales Corporation . . . The North Electric Mfg. Company . . . Stromberg-Carlson Company.



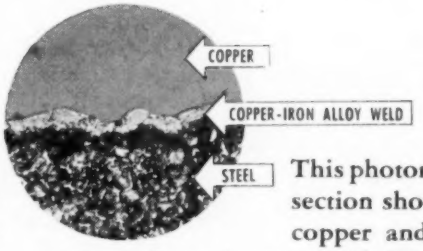


proved -a million times!

According to the aerodynamic theories of a few years ago, it was impossible for the bumble bee to fly. Its body was too heavy for its wings. Despite this handicap, bumble bees by the millions refused to be grounded.

Before 1915, copper and steel had never been successfully integrated and doubters said that a practical method would never be found. The different melting points and the varying expansion rates of these two metals had presented too much of a problem. Then Copperweld Steel Company developed the Molten-Welding Process, and presented industry with the first successful copper-covered steel wire. Today, the millions of miles of Copperweld Wire in service have proved that Copperweld provides the highest standards of efficiency at lowest annual cost.

In the Molten-Welding Process, molten copper is poured around a heated alloy steel billet under carefully controlled temperatures and casting conditions.



This photomicrograph of the weld section shows how the crystals of copper and steel form a permanent and continuous weld. The perfect interlocking of these two metals, accomplished only by Molten-Welding, provides rugged strength, high conductivity, rust-resistance and long life.

Tensile strengths up to 180,000 pounds per square inch are attained with the special alloy steel used in Copperweld Wires. And these strengths are permanent because the steel is always protected by a heavy copper covering of uniform thickness.

When your specifications or purchase orders call for Copperweld, make certain that you get Copperweld quality by actually seeing the name "Copperweld" on the product itself or on the tag accompanying every coil and reel.

COPPERWELD STEEL COMPANY • Glassport, Pa.

Sales Offices In Principal Cities

Copperweld TRADE MARK **PRODUCTS**

• POWER CONDUCTORS • GUY & MESSENGER STRAND • OVERHEAD GROUND WIRE • GROUND RODS & CLAMPS • COUNTERPOISE WIRE • TELEPHONE LINE WIRE • TELEPHONE DROP WIRE • WEATHERPROOF WIRE • SIGNAL LINE WIRE • SIGNAL BONDS • INSULATOR TIES • NAILS & STAPLES • FENCE & BARBED WIRE

Free Literature Department

New Product Literature of Practical Interest

All literature described in this department may be obtained by sending in the handy blank at the bottom of this page.

ANTI-CORROSION STRAP SELECTOR: As part of its program of educating maintenance and production men in the proper selection of strapping for various conditions, A. J. Gerrard & Co. offers without charge an Anti-Corrosion Strap Selector. In operating this interesting and handy device, the user simply dials an arrow so that the arrow-head points to the type of chemical condition, atmospheric environment, soil, water or gas fumes to which the strapping will be exposed.—*Request FL* 281.

CARRIER: J. H. Bunnell & Co. has issued a new catalog describing F M Carrier equipment. Equipment can be integrated with most types of telephone carrier systems. Bunnell catalog is "must reading" for telephone men.—*Request FL* 282.

CHEMICAL BRUSH CONTROL: Illustrated booklet gives complete story of Davey Chemical Brush Control Service. System has proved in as effective, economical method of keeping right-of-way open by killing most living growth to the ground and large percentage of existing stands of mixed species. Copy of attractive booklet will be source of valuable reference data.—*Request FL* 283.

LINE CONSTRUCTION & MAINTENANCE BODIES: Bulletin describes Powers' line of maintenance and line construction bodies. Bodies are built and designed to meet field reqirements; all necessary tools, accessories, supplies and equipment are ever-handy for instant use.—*Request FL* 284.

PAVING BREAKER:—Bulletin describes new paving breaker that is operated by electricity rather than compressed air. Breaker is claimed to hit harder blow than the largest pneumatic breaker.—*Request FL* 285.

POLE HOLE DIGGER: New circular describes Tel-E-Lect pole hole digger. Digger operates off any derrick truck; is adjustable for clean holes to 8 ft. deep; has interchangeable augers, 9" to 16" diameter; drills a straight hole from any truck position.—*Request FL* 286.

PULLER: Bulletin UMP-1 describes the "Mighty Midget Puller" that pulls 500 lb., yet is easily carried on lineman's belt. Puller weighs but 6½ lbs; is compact enough to fit in one-foot space.—*Request FL* 287.

TELEPHONE DATA BOOK: Telephone data book issued by Copperweld Steel Company is packed with information of value to all telephone men; provides data that is invaluable to construction and maintenance forces.—*Request FL* 288.

TRACING SHEET: Free draftsman's tracing sheets of clamps are offered by Thomas Associates. Designed to slip under perspective or scale drawings, the sheets show clamps in ¼", ⅜", ½" and 1" sizes. Each size is drawn rotated through 90 degrees in increments of 15°'s. The sheets can be used to indicate any type supporting clamp and will save from 50% to 75% of drafting time normally required.—*Request FL* 289.

HEATERS: Dravo Corp. has announced publication of a new 12-page bulletin (No. 523) describing the Dravo "Counterflo" forced air space heater. Available in standard output capacities from 400,000 to 2,000,000 Btu's per hour, the warm air heater is direct fired either by oil or gas and can be supplied with combination burners for quick conversion from one fuel to the other. The new bulletin emphasizes the heater's "five-function" versatility. In addition to its primary use for comfort heating, it also can provide year 'round ventilating, process drying, tempering makeup air and heat curing. Long service life is assured by the heater's stainless steel combustion chamber. High efficiency (80 to 85%) is achieved by four-pass counter-flow combustion combined with a warm air recirculation principle.—*Request FL* 290.

TELEPHONE ENGINEER PUBLISHING CORP.
7720 North Sheridan Road
Chicago 26, Illinois

Please enclose the following literature described in the Free Literature Department of the March, 1949 issue of TELEPHONE ENGINEER and MANAGEMENT: (Check information desired)

FL 281.....FL 282.....FL 283.....FL 284.....
FL 285.....FL 286.....FL 287.....
FL 288.....FL 289.....FL 290.....

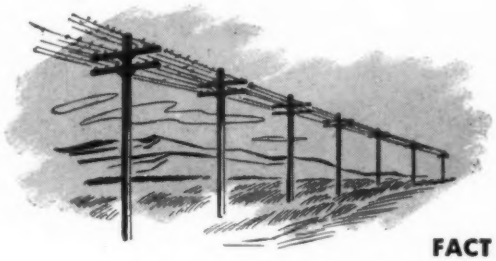
Name ..... Title .....

Company: .....

Street Address: .....

Town: ..... Zone:..... State:..... .....

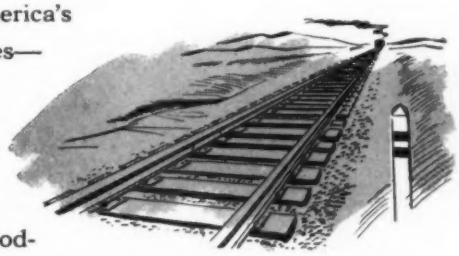
A Few Plain Facts about Preserving Wood



FACT 1: Creosote Oil, properly applied, protects wood against dry-rot, termites, fungi, and other wood destroying organisms—extends the life of wood three to five times, or longer.

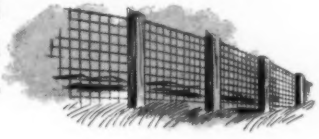
FACT 2: Creosote Oil is the most widely used, the most universally preferred, wood preservative in the world.

FACT 3: Creosote Oil for the pressure treatment of wood has been in use long enough to *prove* its effectiveness. It has been successfully used under practically all conditions for more than 100 years.



These are the reasons why Barrett—one of America's oldest and largest producers of wood preservatives—stands squarely behind Creosote Oil. When a truly better, more dependable method of preserving wood is found, you may be sure that Barrett, with more than a half-century of wood-preserving experience, will sponsor it.

These are the reasons, too, why so many of America's leading railroads and utilities continue year after year to use Creosote Oil to protect their huge investments in ties, poles and structural timbers. At today's exceedingly high prices for lumber and labor, they recognize that it's more than ever important to use a wood preservative that has demonstrated its effectiveness beyond all shadow of doubt.



PENETRATES...PRESERVES...PROTECTS

THE BARRETT DIVISION

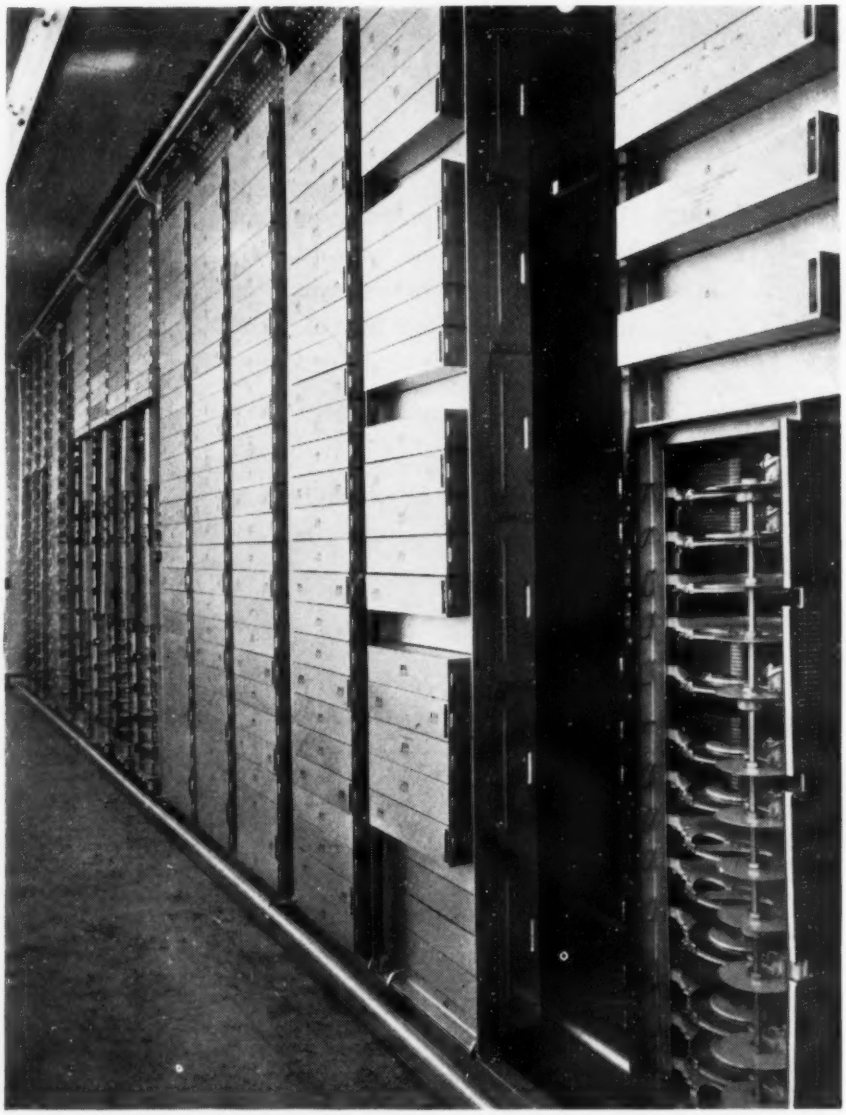
ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Barrett®

®Reg. U. S. Pat. Off.

ROCHESTER



Cuts Over Another ROTARY EXCHANGE

VIEW OF INSTALLATION of Federal coin box Rotary dial equipment in the Empire exchange. From left to right are: Final Selector Bays, First Line Finder Bays, Adapter Circuit Bays, and the Overtime Trunk Circuit Bay—for the timing of overtime paystation calls.

ONE OF AMERICA'S GREAT FACTORIES SERVING THE TELEPHONE INDUSTRY

Rochester Telephone Corporation has taken another important step under its master plan for converting its entire manual multi-office network to dial operation . . . a plan that was inaugurated August 27, 1948, with the *first* major Rotary installation in the United States, at Rochester, N. Y.

At 6 A.M. Wednesday, February 16, 1949, the Corporation successfully completed the second of a series of cut-overs when 1260 paystations of the Main exchange were transferred to the new Empire Rotary exchange—a 90 per cent fill on 1400 lines installed—bringing to downtown Rochester the latest features of modern coin box dial service.

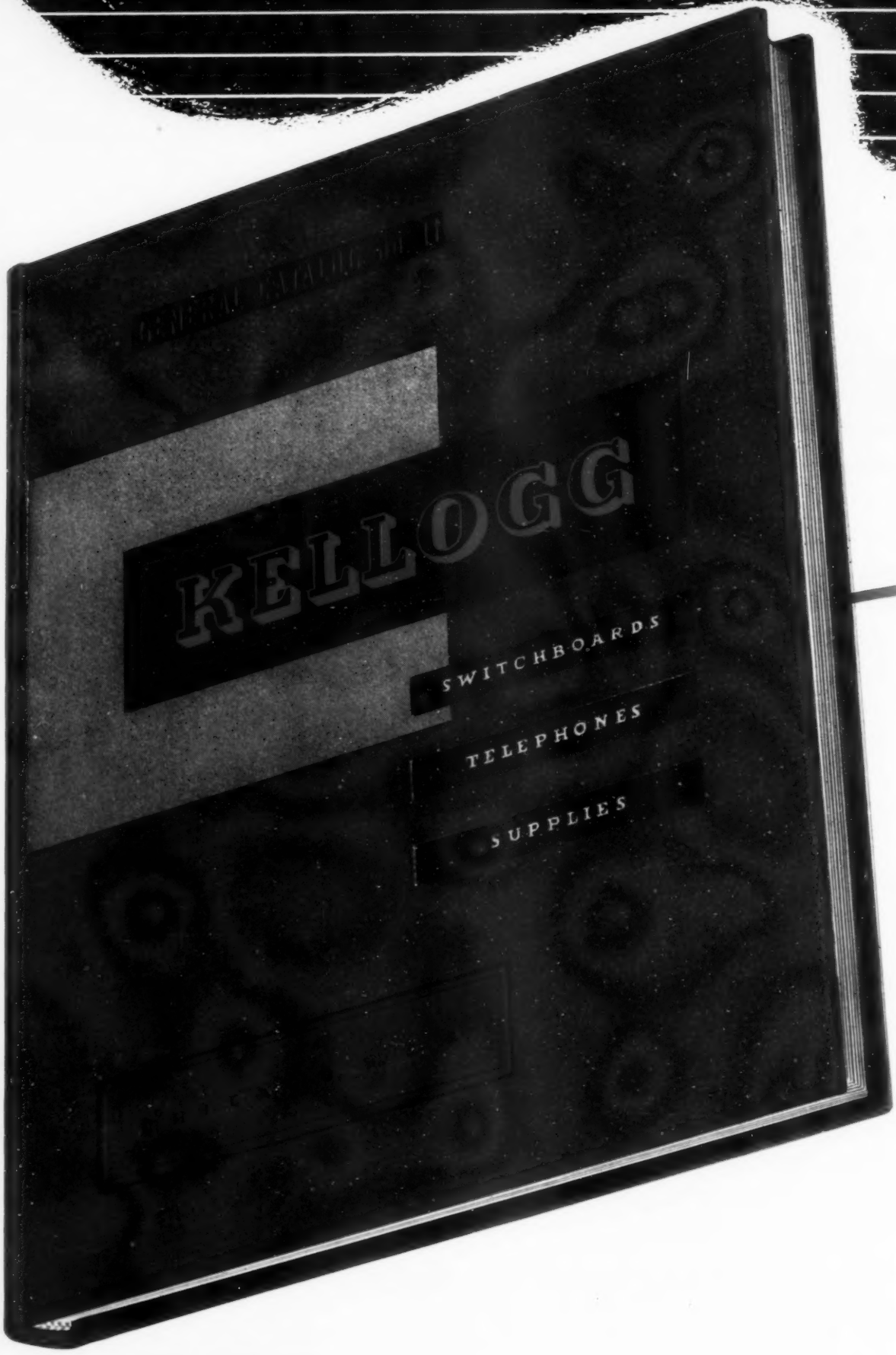
Rochester's second cut-over is significant for the reason that it was made in the *middle* of a week—at the hour when traffic is beginning its daily upward climb. The selection of this day and hour represents a new idea in cut-over planning, as it allowed the telephone company up to three normal working days for any action or instruction work required during the immediate post-cut-over period. It also indicated the confidence of the Rochester Telephone Corporation that Federal equipment would meet all service requirements.

An important innovation in Rochester's Rotary System is that paystation callers are automatically protected against the loss of coins. If traffic is heavy and dial tone is not immediately available, the calling party's coin is promptly returned. A coin deposited for a call to the New York Telephone Company's long distance operator, or to Rochester's DSA Board, is automatically returned as soon as the operator answers.

Stuck coins, receiver-off-hook, shorts, or other faults causing line relay operation are automatically picked up after a pre-determined interval. Such calls are connected to the test desk where they are identified by the line finder terminal number being displayed on an indicator panel without any manual tracing of calls. Faulty lines are thus tested more rapidly; this means a reduction in station-out-of-service time . . . in maintenance effort . . . and in switch-occupancy time.

Installation work is progressing at a rapid pace in preparation for the *third* cut-over under Rochester's master plan—the retirement of the Main central office through the transfer of the remainder of its 22,000 manual stations to the new Locust Rotary exchange.

FEDERAL
FTR
TELEPHONE & RADIO
An IT&T ASSOCIATE
Federal Telephone and Radio Corporation
100 KINGSLAND ROAD, CLIFTON, NEW JERSEY
In Canada: – Federal Electric Manufacturing Company, Ltd., Montreal, P. Q.
Export Distributors: – International Standard Electric Corp. 67 Broad St., N. Y.



KELLOGG SWITCHBOARD AND SUPPLY COMPANY

Established 1897

TELEPHONE EQUIPMENT

6650 SOUTH CICERO AVENUE • CHICAGO

JUST OFF THE PRESS!

KELLOGG'S NEW CATALOG

gives you a complete guide to the most modern telephone equipment

The new Kellogg Catalog is now being mailed everywhere, upon request. It's a *big* book, with more than 300 pages packed full of helpful information about switchboards, telephones, component parts, voice repeaters, carrier systems and supplies. Over 1,000 illustrations are used, too! Pictures of apparatus, circuit descriptions, construction details, applications and everything else you want to know are clearly illustrated. This handsome new volume is sturdily bound and cross-indexed for quick reference to any item.

IF YOU'D LIKE TO RECEIVE A COPY, MAIL THE COUPON *TODAY!*

Send this Coupon Now!

Kellogg Switchboard and Supply Company
6650 So. Cicero Avenue
Chicago 38, Illinois

Please send a copy of your new catalog.

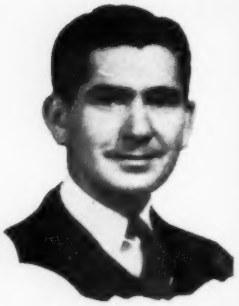
NAME:_____

COMPANY:_____

ADDRESS:_____

CITY:_____ STATE_____

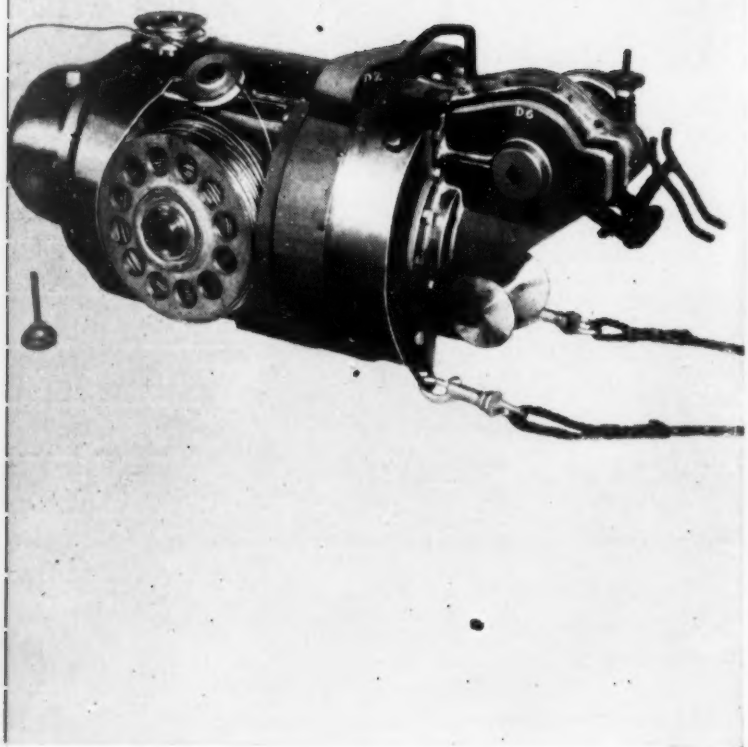
Successful INDEPENDENT TELEPHONE MAN Says:



J. E. WOMMACK,
De Queen Telephone Co.
De Queen, Ark.

"For 47 years we have enjoyed pleasant business relations with Kellogg. It gives us confidence, too, to know that we have access to their great store of telephone knowledge and 'know-how'."

Neat, Precision Soldering is easy when you use a Vulcan Electric Soldering Iron. The high-powered heating element assures a long life of unimpaired heat production. These VULCAN ELECTRIC CO. irons come in 15 sizes of screw and plug tip types—including the "Pygmy" tool, (shown at top) for delicate work in cramped spaces. Copper tips are easily replaceable.



Lower Costs on New Construction! The Model "D" Neale Cable Spinner, made by the CABLE SPINNING EQUIPMENT COMPANY, operates smoothly under all conditions. Double-drive mechanism insures evenly-spaced spirals spun under steady tension. Ratchet lock holds the spinner in place on strand whenever pull on tow line is released.

for EASIER ORDERING PROMPT HANDLING QUICK SHIPMENTS

...send your next order to KELLOGG

When you order from Kellogg, you fill out just ONE order form for *all* your line supplies. Saves you time and work! Then your order gets prompt attention by experienced telephone men. No chance for slip-ups here! Finally, we ship quickly, from the distribution point nearest you. It's fast, sure service, and every item is *guaranteed!*

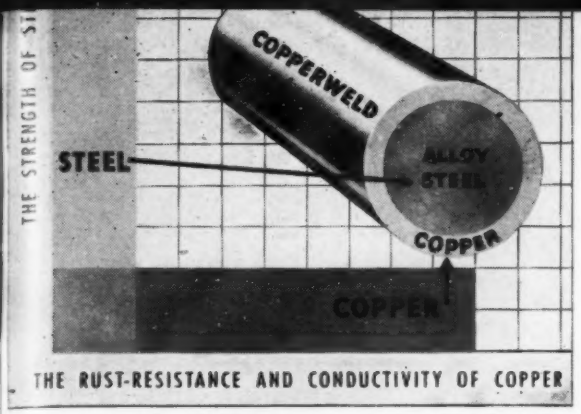
For Service from a Nearby Distribution Point, Order Your Line Supplies from:

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

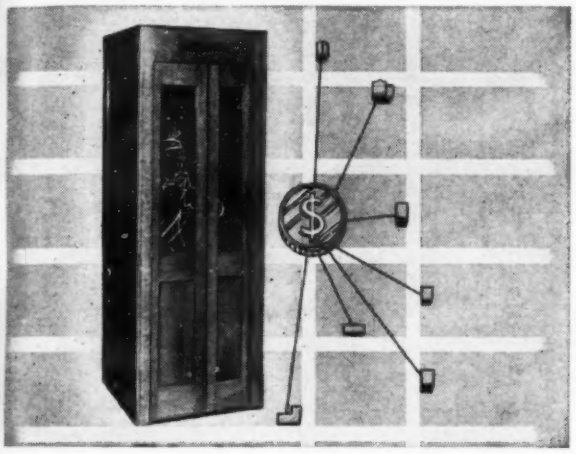
SUPPLIES

Factory and General Offices: 6650 SOUTH CICERO AVENUE, CHICAGO 38, ILL.
Branch Offices: KANSAS CITY • SAN FRANCISCO • ST. PAUL • LOS ANGELES

ALL OF THE ABOVE ITEMS MAY BE QUICKLY AND CONVENIENTLY ORDERED FR E K



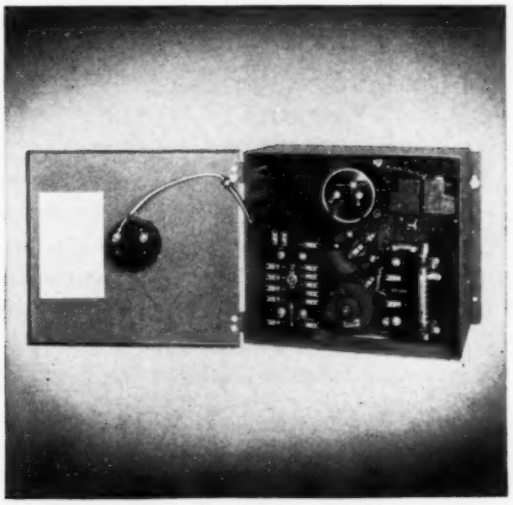
For Jobs Requiring Strength, Permanance and Conductivity, select Copperweld Line Wire, made by COPPERWELD STEEL CO.'S Molten Welding Process. Its strong, alloy-steel core provides strength, while its copper covering furnishes rust-resistance and high conductivity.

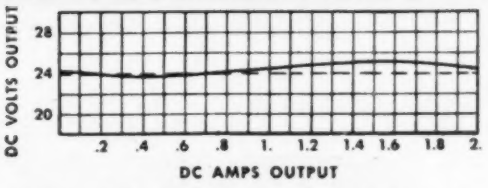


Make Every Pay Station a Paying Location! Modern Churchill booths attract extra patronage everywhere. That's because they give the public the privacy, roominess and comfort it wants. Above is the CHURCHILL CABINET CO.'S No. 100 booth, with automatic light switch and ventilator.

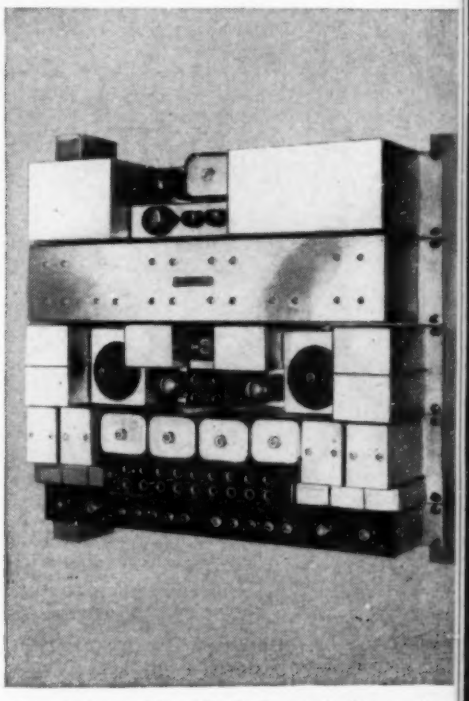
Durable and Quiet. The Sub-Cycle Master Ringing Converter changes frequency without moving parts because it is a static-type converter. Made by LORAIN PRODUCTS CORP., it gives powerful, dependable, trouble-free ringing current without wear, adjustment or maintenance. Provides close output regulation between no load and full load. In several models.

Hostilities will cease on the whole front on Nov. 11 at 11 A.M." Thus went the telegram ending World War I. In peace and war, research has enabled Hemingray Insulators, made by AMERICAN STRUCTURAL PRODUCTS CO., to provide increasing efficiency.





Steady DC Voltage, required by switchboard lamps and telephones (especially dial), can be assured when you use a RectiFilter. Made by RAYTHEON MANUFACTURING CO., it operates from regular AC source. And with no moving parts to wear, maintenance is low.

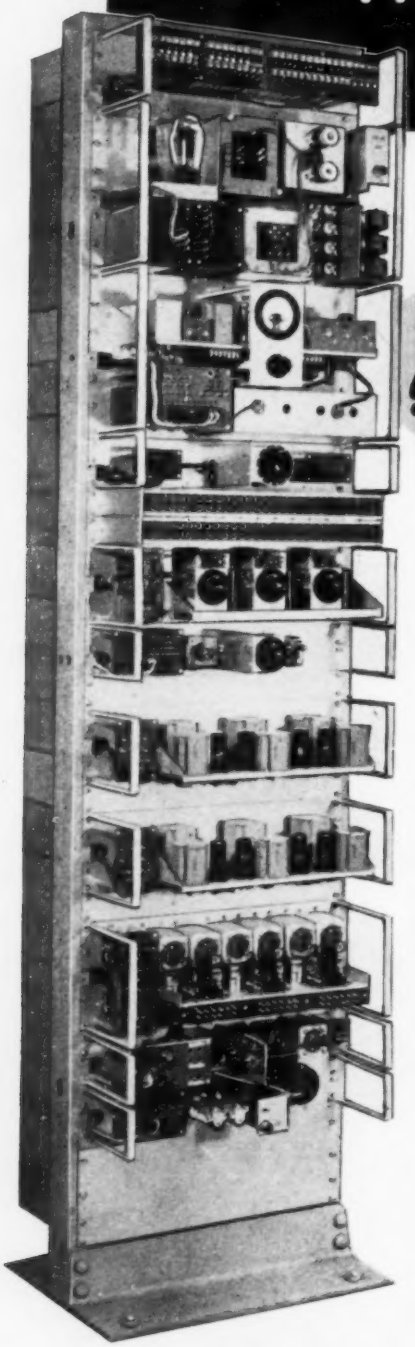


For Strong, Clear Toll Transmission and a quiet circuit, use the Kellogg Repeater. New, sharp cut-off filter aids in obtaining maximum usable gain. Important features are "unit" construction and ease of adjustment. Made by KELLOGG SWITCHBOARD & SUPPLY CO.

THE KELLOGG SWITCHBOARD AND SUPPLY COMPANY

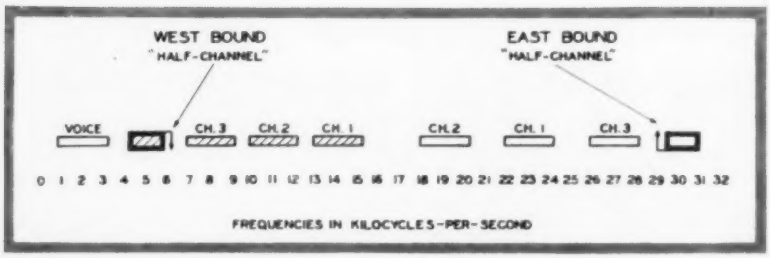
Lenkurt TYPE 32D 3½ CHANNEL CARRIER SYSTEM

That ½ CHANNEL gives you 9 EXTRA TELEGRAPH CHANNELS



Lenkurt Type 32D Carrier Terminal with protective dust covers removed. Compact front and back rack mounting insures ease of installation and inspection.

Now, in addition to three normal telephone channels, you can have up to NINE VF carrier telegraph channels, without impairing any of the telephone channels or the physical circuit. A filter system with a lower cut-off allows the Lenkurt Type 32D system to use the otherwise wasted frequencies immediately above and below the carrier channels for an additional "half-channel".


WEST BOUND
"HALF-CHANNEL"
EAST BOUND
"HALF-CHANNEL"
VOICE
CH. 3
CH. 2
CH. 1
CH. 2
CH. 1
CH. 3
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
FREQUENCIES IN KILOCYCLES-PER-SECOND

On the "half-channel", besides the superimposed VF telegraph channels, the modulating carrier frequency is also transmitted at subdued level; after recovery and amplification, it is used for demodulation—thus eliminating all synchronizing problems and precluding any "bias" or frequency drift on the telegraph channels.

The Lenkurt Type 32D system will work over any distance provided Lenkurt Type 32R repeaters are installed at suitable intervals.

WRITE TODAY giving details of your plant layout; we'll send engineering data covering the many applications of the Lenkurt 32D system.

RECOMMENDED AND DISTRIBUTED BY

AUTOMATIC ELECTRIC SALES CORPORATION

1033 W. VAN BUREN ST., CHICAGO 7, ILL.

NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*

ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

NEWSLETTERS *on Alternate Weeks*

March 15, 1949

Dear Sir:

North Dakota Public Service Commission in recent order directing Moore & Liberty Tel. Co. to resume interexchange telephone service by direct line between Enderlin & Nome, upheld company's contention that "free service" should be discontinued. Commission stated that experience proved when interexchange line is available for use by all subscribers without specific charge, service has been unsatisfactory. Order commented that: Free service lines tend to be used extensively for service calls; such use cuts down completion of business & emergency calls; such conditions lead to demands for additional "Free Lines" resulting in "undue burden on small telephone company & on subscribers in both exchanges who have no occasion to use interexchange line..."

* * *

1949 Executives Conference of United States Independent Telephone Association is set for Edgewater Beach Hotel, Chicago, April 11-12. Everyone planning to attend should now write hotel requesting accommodations desired. Attendance at Conference is restricted to USITA members in accordance with resolution of Board of Directors adopted several months ago. Clyde Bailey, USITA exec. v.p., advises that Conference is for executives of Independent telephone companies. In this category are representatives of Plant, Traffic, Commercial & Accounting Departments of operating companies, as well as other telephone people occupying executive positions. Included also are State Association Executives & key representatives of manufacturers.

* * *

Growing support in Congress for reduction or repeal of excise taxes on telegraph and telephone services continued to mount with declarations by two important Democrats & with another measure added to more than two-score bills on subject now in the Congressional hopper. Rep. Kennedy (D., Mass.) is latest to have bill for complete repeal of telephone & telegraph, transportation & pipeline excises. Sen. Humphrey (D., Minn.) in recent television program stated there was growing sentiment in favor of reducing present excise levies on telegraph & telephone services & "something ought to be done about it in present Congress."

House Ways & Means Committee, however, is not expected to get into communications-transportation excise matter until early spring as it is immediately taking up Social Security expansion program of President. Increased Social Security levies, which President Truman advocates, are stepping up of present 1% tax for employer & employee each to 1½% on July 1 & up to 2% by Jan. 1, 1950. This would mean doubling of expense burden in Federal Social Security levies for communications industry for its almost 700,000 employees.

Recent bill introduced by Pennsylvania State Legislature would amend Public Utility Law by prohibiting increases in rates for at least six months after application or protest is made & providing for hearings in all cases. Present law permits rates to be increased after 60 days notice & without hearings if Commission decides rates are justified. Another bill would require cleaning & fumigating of all public telephone booths furnished by any telephone company, at least twice each year.

* * *

Another group of 10 authorizations, reflecting consistently strong growth of utilities' radio systems, was recently issued by FCC to electric cooperatives and power companies, which will permit installation of 19 base stations and 96 mobile units.

Rural Electrification Administration also approved grant of loans to three cooperatives which will allow purchase of radio telephone equipment. REA grants went to Mississippi County Electric Cooperative of Blytheville, Ark.; Sekan Electric Cooperative Association of Girard, Kans., and Fox Creek Rural Electric Cooperative Corporation of Lawrenceburg, Ky.

* * *

Highlights: Camanche (Ia.) Tel. Co. held open house to show public new bldg. & automatic equipment....North Dakota Tel. Co. converting Park River, N. D., to automatic operation....Ralph D. Tiller appointed gen. mgr. Farmers Tel. Co., Lancaster, Ia....Calvin Hesselgrove purchased Zumbro Falls (Minn.) Farmers Tel. Exchange....Orlo Dean elected pres., Griswold (Ia.) Co-op Tel. Co.; succeeds C. W. Rodgers.

Wisconsin Public Service Commission granted Farmers Union Tel. Co. one year to complete automatic installation at Middleton....Eastern Nebraska Tel. Co., Blair, Neb., filed articles of incorporation; named Reed O'Hanlon, resident mgr.; capital stock $35,000....Fire destroyed automatic exchange of Malheur Home Tel. Co., Vale, Ore....Southwestern Associated Tel. Co. moved its general office to Dallas from Lubbock on Feb. 25. Company officials, headed by R. B. Fairly, pres., will make their homes in Dallas....Brownwood (Texas) City Council has granted first telephone rate increase since 1917 to Southwestern States Tel. Co.

Central Tel. Co. completed new building at Farmington, Minn.; will convert exchange to automatic service....American Tel. Co. converting Hill City, Kans., to common battery operation....Directors of Mountain View Tel. Co., Yettem, Cal., considering proposal to merge with Farmers Tel. Exchange, Orosi, Cal....Pennsylvania Tel. Co. purchased Larimer Tel. Co., Meyersdale, Pa.....Vernon Higginbotham purchased Walnut (Kans.) Tel. Exchange....Emmans (Pa.) Tel. Co. considering changeover to automatic operation....Mutual Tel. Co., Okeene, Okla., started 45th year of operation; L. C. Westfahl elected president....Hanlontown (Ia.) Co-op Tel. Co. increased dues to $17.

Died: Alan G. Arison, sales engineer of Hubbard & Co....W. D. Land, 64, owner of Brownsboro (Tex.) Tel. Co....Herman G. Ogren, former mgr. of Langford (S. D.) Tel. Co.

Ray Smith

Ray W. Smith, Editor

THE WHITNEY BLAKE BULLETIN

DROP WIRE CONDUCTOR COATINGS

Copper Poisons Rubber. It is generally believed that a coating such as tin is applied to copper conductors which are to be rubber insulated in order to protect the copper from corrosion by the rubber compound. This, however, is not the case. The presence of even small quantities of copper in contact with rubber greatly accelerates the oxidation of rubber. Therefore, a coating such as tin is actually applied to protect the rubber from copper. A protective coating on rubber insulated wire is essential.

Limitations of Tin

Tin coatings on copper and bronze conductors for telephone drop wire have been used for many years. During recent years, however, the use of tin alone as a coating on conductors as large as those used for drop wire has not been permitted because of the shortage of tin. Mixtures of tin and lead applied from a hot molten bath are used generally by others in place of tin. To obtain adhesion, use is made of high sulphur bearing adhesives with not always satisfactory results. A principal advantage in the use of tin as a conductor coating is its ease of application from a molten bath at comparatively low temperatures. Also, it is possible to obtain satisfactory adhesion of rubber insulation to a tin coated conductor. However, uniformly good adhesion is not always obtained and under most service conditions the adhesion obtained with tin is short lived.

Copper Contaminates Tin Coatings

Examination of the hot-dip tinning process shows that as the copper or bronze conductor passes through the molten bath, some copper is dissolved. As a result, the coating applied is not tin, but tin contaminated with copper. The presence of even minute quantities of copper at the rubber-conductor interface in the conductor surface presents the possibility of electrolytic corrosion of the conductor since adjacent areas on the surface will be electropositive and electronegative to each other. Under drop wire service conditions, namely summer heat, moisture, oxygen from the air and acidic oxidation products of the rubber vulcanization reaction present, all the required conditions for electrolytic corrosion exist. Corrosion does occur with resulting loss of adhesion of insulation to conductor. Also, as corrosion takes place, sizeable areas of the bare copper or bronze are exposed to the rubber to exert a deleterious effect.

Rubber Adheres to Brass Indefinitely

It has been found that lead, particularly when applied in chemically pure form to the surface of a copper or bronze conductor, is not subject to corrosion under drop wire service conditions. Rubber insulations, however, do not adhere satisfactorily to a lead surface. Rubber does adhere to brass indefinitely when a suitable composition is selected and the composition is maintained within narrow limits. Brass, although it contains copper, exerts little or no effect on the ageing of rubber. When a specific protective agent is added to the rubber, there is no effect.

Teleplate Solves Several Problems

Several years ago, after a careful study of the reasons for loss of adhesion and methods of obtaining permanent adhesion on drop wire, The Whitney Blake Company developed the Teleplate process. This process consists of applying a heavy electrolytic coating of chemically pure lead to a carefully cleaned conductor and then a light electrolytic brass coating of controlled composition over the lead in a continuous operation. The lead coating seals the copper or bronze permanently from contact with the rubber insulation and contributes corrosion resistance. The brass permits of obtaining a high degree of enduring adhesion of insulation to conductor.

All Whitney Blake outside telephone wires are plated with lead and then with brass of accurate composition. The difficulties of such a manufacturing operation are enormous, but the result is TELEPLATE, the conductor coating which provides an effective carrier and promotes enduring adhesion.

Reprints of this advertisement are available on request.

THE WHITNEY BLAKE CO., BOX K, HAMDEN, CONN.

MEREDUC
TRADE MARK

PRESSURE TREATMENTS of Southern Pine Poles, Crossarms, Conduit, Cover Plank, Ground Wire Moulding with No. 1 Creosote Oil or Pentachlorphenol are carried in stock permitting prompt shipments of carload and less than carload orders. Mailing address: P. O. Station "A", Atlanta, Ga.

WILLIAM C. MEREDITH COMPANY, Inc.

Treating Plant: East Point, Ga. — Mailing Address: P. O. Station "A", Atlanta, Ga.

INVEST YOUR "PIN MONEY" IN THE BEST

LOCUST PINS

Locust wood is practically impervious to decay and is impenetrable to moisture. Because of its close-grained hardness locust can be machined into strong, long lasting pins of standard specifications that can be counted on to retain their size and shape.

OAK BRACKETS

Oak pole brackets of unquestioned quality are in demand now as never before in the face of the qualifications necessary in the equipment and materials needed today to "keep 'em talking." Present day maintenance and repair have every reason to demand and get only the best.

GLASS INSULATORS

Research and experiment have produced in Hemingray insulators a glass insulator that is better than any ever before offered.

Non-porous, non-deteriorating, uniform coefficient of expansion and high mechanical as well as high dielectric strength are some of the many qualities that rank Hemingray the "best on the line."

BUCKEYE TELEPHONE and SUPPLY CO.
COLUMBUS 6, OHIO

OUTSTANDING FIRE POTS for 60 years

COILTROL FIRE POT—

Great firepower is held in precise temperature control by flame adjustment valve on detachable coil unit.

Sold through leading jobbers everywhere

CLAYTON & LAMBERT MFG. CO.
1709 DIXIE HIGHWAY • LOUISVILLE 10, KENTUCKY

ON OUR *Party Line*

Heavy Sleeper! . . .

AN ILLINOIS farmer told neighbors he had heard a slight noise during the night, but it hadn't seemed worth getting up about. Here's what actually happened. His silo exploded from silage gas, blowing off the silo roof and sending it 50 feet into the air. The silo, whose concrete walls were bulging from the blast, collapsed onto the barn. The barn folded onto the feed shed. The feed shed knocked over the windmill. The windmill dropped onto an implement shed.

Way Out West . . .

LONG distance operators who place a call to Las Vegas, Nevada, may find themselves greeted by the laconic yet truly western salutation "Howdy Podner." Reminiscent of gun packing frontier days, this greeting was dreamed up as a feature of the town's annual pageant. This telephone welcome attracted so much attention that business houses, chain stores and hotels are considering its permanent adoption.

Peg Count . . .

"PEG COUNT." Two small words, but words which have meant much to the telephone business, for an analysis of the results of the two words governed much of the industry's progress. Here's how the phrase originated: In the days when the telephone was but an infant, the number of operators and the amount of switchboard needed were determined by judgment, over-all observation and the limit of the company's purse strings. As the demand for service grew, however, someone conceived the idea of counting and recording calls handled each hour or half hour, keeping tallies on paper. Then, around 1900, a wooden pag about an inch long and a quarter-inch in diameter was used to count the calls, giving rise to the phrase "peg count." It was done by inserting such a peg in answering jack 1 for the first call, and moving it along as more calls came. Later, mechanical and then press button types came into being. In dial offices of course, calls are automatically counted.

New LIGHTWEIGHT ELECTRIC PLANT

5000 WATTS D.C.

Weighs only 315 lbs.!

Model 5CK-115M, 5,000 watts, 115 volts D.C.

Use fast-working electrical tools on any construction or maintenance job with this high capacity, portable, compact electric plant. Equipped with four-receptacle box for direct plug-in of tools or lights. Available with carrying frame, or dolly-mounted. Powered by Onan 10 HP, two-cylinder, 4-cycle, air-cooled engine. Shipped complete . . . ready to go!

NEW ONAN "CK" ELECTRIC PLANTS are available in 5000 watts D.C., 115 and 230 volts; 2000 and 3000 watts A.C. in all standard voltages.
COMPLETE ELECTRIC PLANT LINE INCLUDES: A.C.—350 to 35,000 watts in all standard voltages and frequencies. D.C.—600 to 15,000 watts, 115 and 230 volts. Battery Chargers—500 to 6,000 watts, 6, 12, 24, 32 and 115 volts.
ONAN AIR-COOLED ENGINES—CK: 2-cylinder opposed, 10 HP. BH: 2-cylinder opposed, 5½ HP. IB: 1-cylinder, 3¼ HP.

Onan PRODUCTS

Write for catalog

D. W. ONAN & SONS INC.
5902 Royalston Ave., Minneapolis 5, Minn.

ONAN ELECTRIC PLANTS

How to select, operate and repair electric generators and motors

Here is a practical manual written to give on the job help to motor repairmen, armature winders, and others who work with electric motors and generators. It describes and illustrates an exceptionally wide variety of types, makes, sizes and designs of alternating-current and direct-current equipment in commercial use today. It details all the important working data you need in order to select, operate, repair and maintain the electrical equipment in your shop or factory more efficiently and economically.

Just Published

GENERATORS and MOTORS

and their applications

By D. J. DUFFIN, formerly of Consolidated Edison Co., of N. Y., Inc., and National Research Council, Washington, D. C.

210 pages, 7½ x 10, 42 illus., $4.00

This book explains operating characteristics of various types of motors and generators; shows how to avoid damage in operation, how to regulate, how to insulate, how to cool, how to test for performance efficiency, etc. It covers everything from preventive-maintenance inspection tables, to the latest special protective design features of today's commercial machinery. Particularly valuable are the step-by-step plans that show you what factors to consider in selecting motors and generators, and show you how to choose the right equipment for each specific job.

Send remittance for your copy to
TELEPHONE ENGINEER PUB. CORP.
7720 N. Sheridan Rd.
Chicago 26, Ill.

ALL the strength and durability inherent in steel are combined—with definite economies—in *Crapo* Galvanized Steel Strand. Heavy, ductile, tightly-bonded zinc coatings, applied by the famous *Crapo* Galvanizing Process, provide lasting protection against corrosion.

Ask the distributor of *Crapo* Galvanized Products near you or write direct for further information.

INDIANA STEEL & WIRE CO.
MUNCIE, INDIANA

How gunpowder carried the news to New York

"THE Erie Canal's open!" rumbled the cannons' mouths in 1823. Hilltop to hilltop the news flew, from Buffalo to New York City, a three-day journey in those days.

Artillery pieces, placed high on the Hudson's ramparts and along the route of the infant waterway, carried the tidings. One hour and a half later, New York harbor went bedlam in salute. "The Erie's open!"

Today a vast network of wire and cable serves the world's communication needs. Hemingray Insulators play an important part in contributing to its efficiency. Over 80 years' experience helps make them the industry's standard.

This advertisement is one of the Hemingray series on the history of communication.

Hemingray Number 110

HEMINGRAY INSULATORS

American Structural Products Company

MUNCIE, INDIANA

Subsidiary of **Owens-Illinois Glass Company**

18 BILLION CONTACTS A YEAR:—"Equipment alone without the human touch is no good. The task of providing service for each customer's needs is a tailor-made job and not a production-line job.

"We have to start out, of course, with good technical plant, but character is built around good personal contacts by the employees and customers. Our acts must be good before we can say we are doing a good job.

"A few figures indicate the enormous volume of contacts telephone men and women make each year. It is estimated that installers and repairmen now make 60 million personal contacts annually. In the business office there are about 190 million a year while the estimated number of operator contacts is 18 billion annually. This totals up to 18,250,000,000 on-the-job contacts made by telephone people each year. It is obvious from these figures that whether individual telephone employees do a good or poor job is very important to our customer relations.

"Multiply a friendly and helpful attitude on the part of each employee by the billions of contacts we have with customers every year, and one gets an idea of the power for good that rests in doing little things right—in what we call overtones of good service."—**Excerpts from talk by Keith S. McHugh, Vice President, A. T. and T.**

• • •

IF YOU ARE CONTEMPLATING A RATE INCREASE:—"We emphasize the importance of having your accounts properly audited, and preparing comprehensive exhibits showing the number of stations now served, the classification of same, the present gross income and operating expense, and the balance sheet. Any company planning to apply for an increase in rates should be in position to show what its income and operating expense, including taxes and depreciation, have been the past two years.

"If companies contemplating rate increases will follow these suggestions, and are furnishing reasonably adequate telephone service in their communities, there need be no fear of the results in the judgment of the regulatory body. Oh I know from my experience, some little fellow is saying we are a small company and cannot produce figures. In the language of one of our well-known radio commentators, we term such statements Bunk with a capital B. Any business worth being in, is worth taking care of, and the records should so indicate, and all such efforts combine to keep the industry on an even keel. If you are apologizing for the type of service you are now selling, do not expect the public to willingly pay increased rates therefor."—**Minnesota Telephone Association Newsletter.**

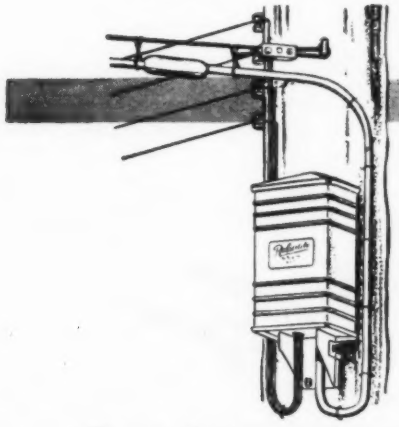
• • •

TELEPHONE SERVICE IN MOSCOW:—Moscow press headlined the fact that Russian housewives were now able to order their groceries by telephone. Newspaper Evening Moscow in reporting this service advancement also announced that special order desks are to be installed in city's biggest shops for housewives who are too busy to do their own shopping. Buyers simply will leave lists of items they want at desk, paper said, & their orders will be ready for them in short time.

This brief bit of Russian progress literally had Moscow writers bursting into ecstasy. Meanwhile American housewives, reading the item, wondered "why such a fuss?" Telephone has been available to housewives of U.S.A. for ordering everything from Dad's beer to diaper service for junior for so long that American housewives just couldn't be impressed.

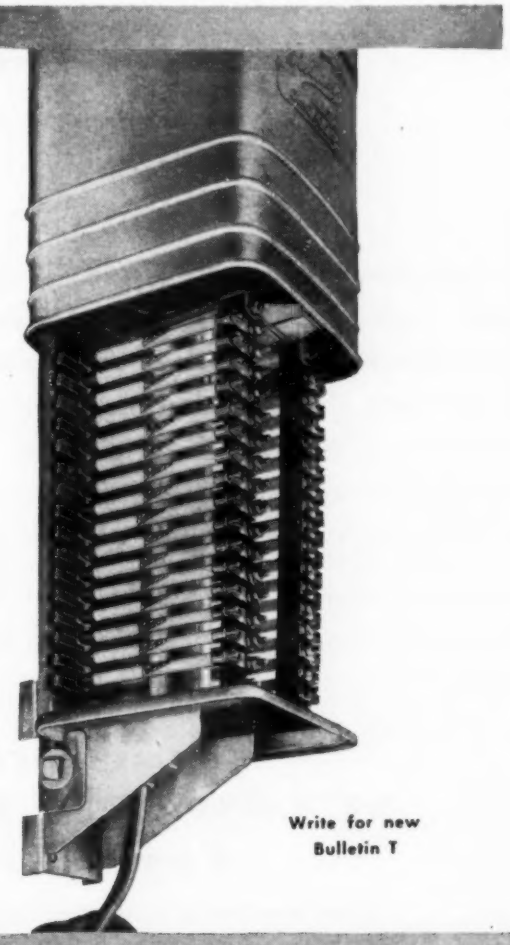
THESE FEATURES MAKE IT *Reliable*

1. **Front-Positioned Binding Post Strips.**
   High dielectric plastic insulation.
   Long leakage path.
   Free from season cracking.
2. **Reliable Sawtooth Discharge Blocks.**
   Self-cleaning.
   No unnecessary grounding of line.
   Static dissipated without time lag.
3. **Square Weatherproof Cover.**
   Holds firmly in raised position.
   No contact with live parts.
   Corrosion Resistant Aluminum Alloy.



Reliable

B-27 PROTECTED CABLE TERMINALS



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EDITORIAL

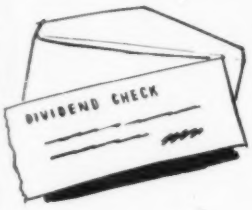
"THE OLD ORDER CHANGES--"

TWO legislative matters now pending in Congress will have serious, and perhaps even vital, effect upon a large section of the Independent telephone industry, if they are enacted into law.

One of these is the proposed amendment of the Wage-Hour Law, to increase the minimum wage.

The other is the proposal to authorize the Rural Electrification Administration to go into the telephone business.

As to the first proposition—the increase of the minimum wage—its proponents want the minimum hourly wage increased from 40 cents to at least 75c. (Some want, in addition, a law under which the minimum wage in certain industries can be increased to $1.00 an hour.)



At the time this is written, indications are that the present exemption of telephone exchanges of up to 500 stations will be retained, at least for the time being. Indications are also that the new minimum may be 60 cents or 65 cents.

But, even if the exemption is retained, there are a considerable number of Independent exchanges in the 500 to 750 station class, or thereabouts, that will seriously feel the effect of a higher minimum wage of even 60 cents an hour. There are, we understand, some 600 Independent exchanges of this class.

Regarding the R.E.A. proposition, a subcommittee of the House Committee on Agriculture has already approved a bill which would authorize R. E. A. to make loans for telephone purposes. Indications are that the full committee will report the bill favorably.

This is only one of the several bills that have been introduced in the Senate and House for this purpose. All of them undertake, generally speaking, to do the same thing. They would supply additional government money to R. E. A. and would authorize that agency to create and lend to telephone co-operatives, in the same manner that electrical co-ops are now dealt with.

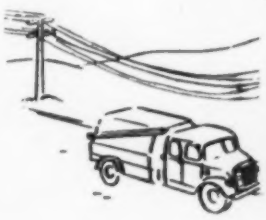
They would also authorize loans to existing telephone companies, for certain purposes, at interest of around 2% and for terms of some 35 years.

We are not attempting to give, here, the pros and cons of this so-called farm telephone legislation, or of the proposed minimum wage amendments. Enough has already been written and said on those subjects, within the telephone industry, to familiarize all telephone people with them.

What we wish to point out is that this legislation—and particularly the farm telephone legislation—will, if enacted, bring about a profound change, in time, in the makeup of the Independent telephone industry.

Just what this change will be will depend, we think, upon the manner in which the Independent telephone industry—and particularly the small companies in it—faces and deal with a situation under which large sums of government money are available, on long terms and at low interest, not to it but also to many co-operative organizations who will set out to supply their own telephone service.

There seems to be considerable belief that, unless the economic situation of the country changes for the worse very rapidly, some legislation of this character is likely to be enacted by the present Congress. It seems to us that one of the most important things now before the Independent telephone industry, under these circumstances, is a study of just what the situation of the industry will be if such legislation does become law —and how the industry should deal with the then situation.



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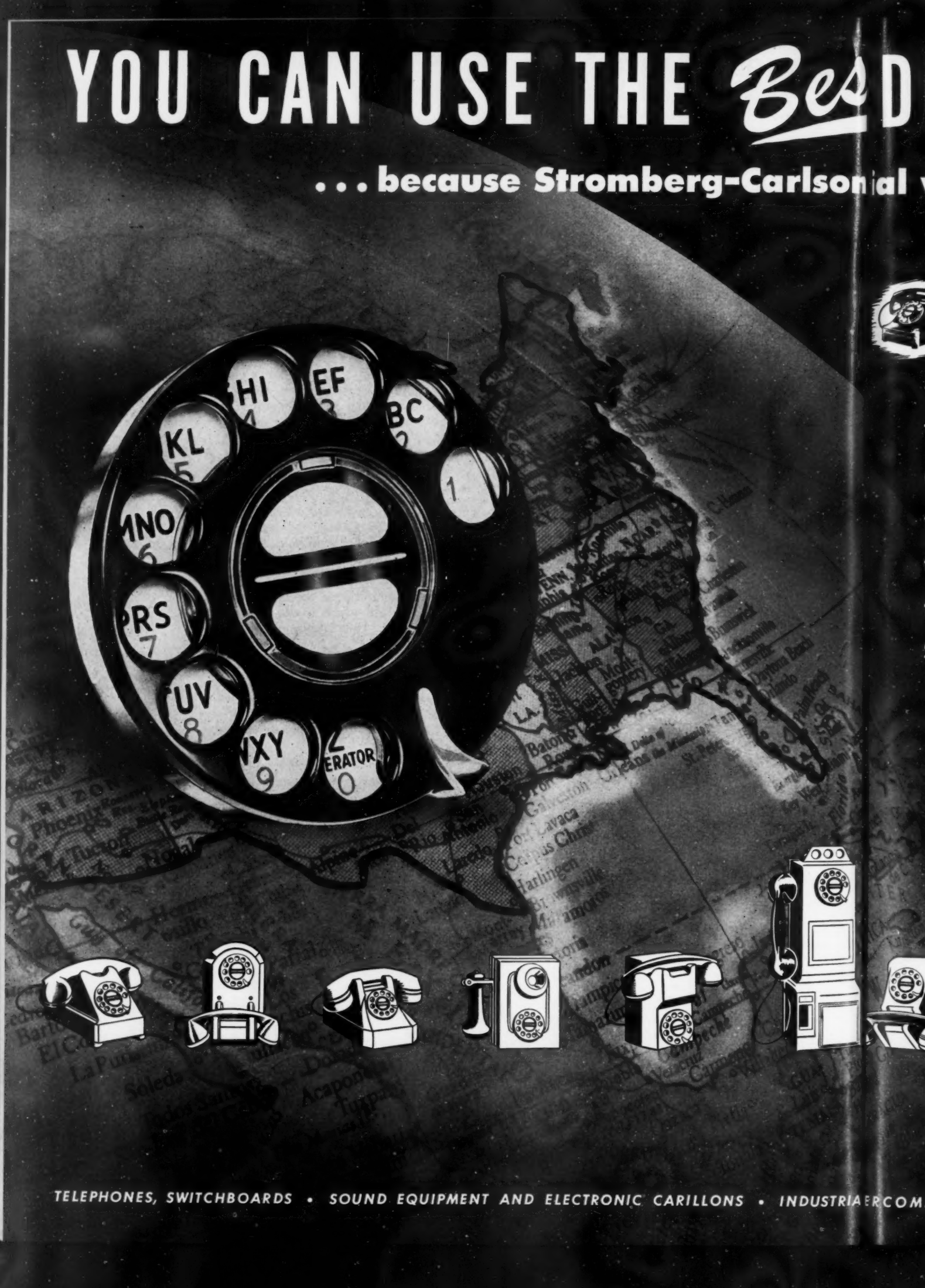

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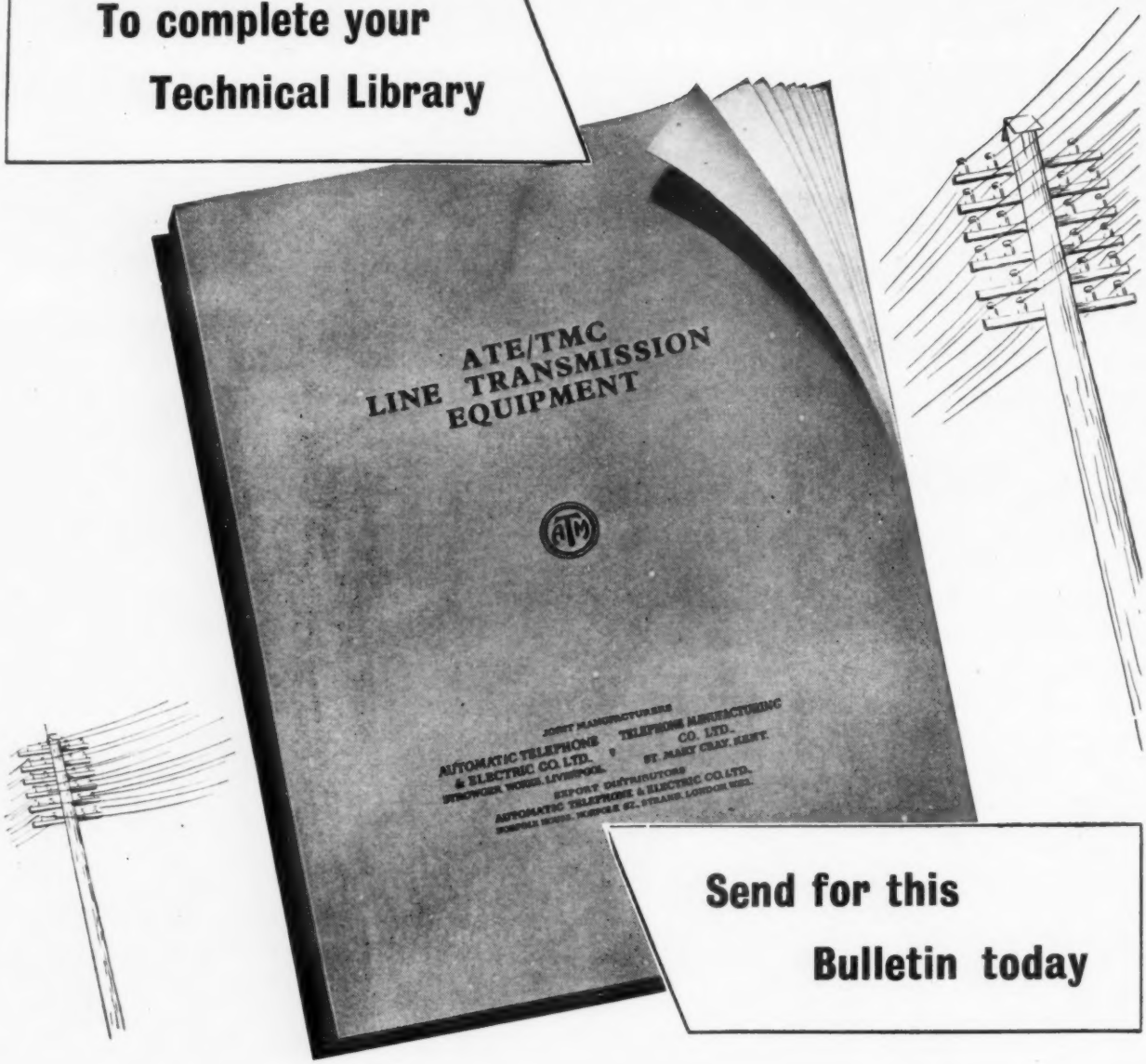

Send for this Bulletin today

This latest ATE/TMC technical loose-leaf bulletin, No. 1097, describes the transmission apparatus and equipment jointly designed and manufactured by Automatic Telephone & Electric Co., Ltd., and Telephone Manufacturing Co. Ltd.

The bulletin is divided into sections under the following headings:—CARRIER TELEPHONE EQUIPMENT, describing single channel and multi-channel equipment for cable or open wire lines, line matching transformer unit, and by-pass unit; V.F. AMPLIFIER EQUIPMENT, two-wire and four-wire types: V.F. TELEGRAPH EQUIPMENT, six, twelve, eighteen and twenty-four channels; SIGNALLING EQUIPMENT, including 17 c/s ringing repeater, V.F. signalling equipment and 500/20 c!s composite signal generator; and MISCELLANEOUS, describing the secraphone, compandor and disconnection locator.

Transmission engineers are requested to write for their copy of this bulletin today.

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NEWS BRIEFS

Hector (Minn.) Telephone Co. Sells $15,000 Preferred Stock

Seeking additional capital to continue its modernization program and to provide the funds for the repairing of its outside plant following recent sleet storms, the Hector (Minn.) Telephone Co. offered for sale 150 shares of its 5% preferred stock ($100 par value) of the total of 250 shares authorized at the annual meeting of stockholders.

Upon the completion of this financing, the capitalization of the company will be represented by $50,000 of 3½% First Mortgage bonds, due 1962, and $15,000 of 5% preferred stock, with the junior equity behind these securities being $19,500 in common stock, and an earned surplus of $20,000, aggregating $39,500.

The proceeds derived from the sale of the newly authorized preferred stock issue will be applied towards the retirement of current indebtedness; the repairing of the storm damage and for general working capital. When the financing is completed, the company will have a well balanced financial statement, and with present earnings and the rate increase being applied for, most satisfactory coverage of interest requirements and the semi-annual dividends on the preferred stock issue is indicated.

United Telephone Co. To Install New Units

Work has started on the installation of additional switchboard units at the Bedford, Pa., exchange of the United Telephone Co. The new units will require about 60 days for installation. When they are placed in operation some time late in March, they will bring the total number of positions in service at Bedford to 11—more than double the number in service before the war.

The additions are part of a $1,000,000 expansion program launched last year by United Telephone Co. Some of the larger projects in the Bedford district completed last year included a 40% increase in switchboard facilities at Bedford; a new two-position switchboard at Everett; and a number of line extension jobs.

In addition to the three positions of equipment which will be connected in Bedford, the telephone company plans to install another new switchboard at new quarters in Everett.

To provide space for the new units the company has made extensive alterations at its Bedford office. The entire second floor of the main building has been converted into one large room to be used as a central office. A new acoustical ceiling has been installed, and new lighting will make work easier. A large and attractive lounge room has been provided for the use of the telephone girls in the annex.

Pennsylvania Independent Votes $200,000 Stock Increase

Stockholders of the Denver & Ephrata (Pa.) Telephone & Telegraph Co. have voted for an increase of the capital stock of the corporation from 4,000 shares to 12,000 shares at a par value of $25.00, making a total of $300,000, or an increase of $200,000. The first $100,000 will be issued to cover the cost of dial equipment and other plant at Manheim and Lititz, where new buildings are awaiting the installation of the dial equipment. Complete installation is expected late in 1949. The second $100,000 will be held in the treasury until further needs warrant such sale.

The following directors were re-elected: C. E. Eaby, Bertha Brossman Eaby, Monroe Lausch, Jacob Buch and William B. Brossman.

Immediately following the stockholders' meeting the Directors met and elected the following officers: C. E. Eaby, president; Bertha Brossman Eaby, vice president; Monroe Lausch, secretary, and Jacob Buch, treasurer.

A preliminary report of the company's business for the year ending, 1948, was submitted by president Eaby.

During the year, 1,656 telephones were installed, 834 telephones were removed leaving a net gain of 822 and a total of 8,784 telephones. At the beginning of the year 1948, there was a total of 674 deferred orders for telephone service and 443 at the close of the year. 696 poles were replaced and more than seven miles of pole lines constructed. A total of 37,745 feet of aerial and underground cable was added to plant and 37 miles of wire strung.

Dial service for all Ephrata subscribers was completed August 22, 1948 at a cost of $94,000 for central office dial equipment plus an additional cost of $15,000 for replacing obsolete telephones.

Total operating revenues increased from $328,909.63 in 1947 to $366,790.06 in 1948. Operating expenses increased from $218,244.54 in 1947 to $245,928.96.

New Company Formed At Doland, South Dakota

A new telephone company, the Doland (S. D.) Eastern Cooperative Telephone Co. was recently organized to replace the Eastern Telephone Co.

Plans call for serving a maximum of 18 subscribers. New officers are George Barkema, president; Arnett Flint, vice president, and E. A. Lucke, secretary-treasurer.

John H. Paige Elected Vice Pres. of Wisconsin Bell

The Wisconsin Telephone Co. announced that at a meeting of the board of directors on Tuesday, February 22, John H. Paige was elected vice president in charge of personnel and public relations effective February 23. He succeeds John O'Day who recently retired.

Mr. Paige came to Milwaukee from Albany, New York, in April, 1948, upon his appointment as general com-

mercial manager. Mr. Paige, a native of Ogdensburg, New York, and a graduate of Colgate University, joined the New York Telephone Company in 1930. He held various positions in the Traffic and Commercial Departments of that company, and at the time of his transfer to Milwaukee was the Division Manager for the Albany area. He is married and has four children.

Other promotions announced: Edmund B. Bruner, division manager of the Illinois Bell Telephone Co.'s Chicago area, was appointed general commercial Manager to succeed Mr. Paige; Millard B. Smith was appointed assistant vice president, operations; Charles F. Weiler was appointed assistant vice president, business research and revenue requirements; Frederick A. Kindt, general traffic manager, was appointed assistant vice president, personnel, and Herbert V. Hurlbrink, division traffic manager, Bell Telephone Co. of Pennsylvania's Philadelphia Area, was appointed general traffic manager.

A native of Illinois, Mr. Bruner started with the Illinoois Bell Telephone Co. in Chicago is 1930 as a student engineer following his graduation from Indiana University. In recent years he had been in charge of that company's information program, and for the past year has been division manager in Chicago.

Sale of Telephone Company Approved

Sale of the Kutztown Rural Telephone & Telegraph Co., Trout Run, Pa., to the Lycoming Telephone Co., Stony Run, Pa., has been approved by the Pennsylvania Public Utility Commission.

The Kutztown company serves more than 186 subscribers in Upper Macungie, Lowhill, Heidelberg, Lynn and Weisenburg townships, Lehigh county, and Albany, Greenwich and Maxatawny townships, Berks county, Pa.

General Telephone Corp. Reports Net Earning Increase

General Telephone Corp. reports for the year ended December 31, 1948 total operating revenues of $53,187,000 as compared with $44,051,000 in 1947. Consolidated net income available for Common Stock was $2,843,000, equivalent to $2.62 per share on the average number of shares outstanding during the year, as compared with $2,105,000 ($2.14 per share) in the preceding year. Gross construction expenditures (exclusive of acquisitions) totalled

$41,387,000 as against $28,040,000 in 1947.

The total income of the parent company was $3,030,000; and after payment of operating expenses, taxes and preferred stock dividends, this was equivalent to $2.01 per share on the average number of shares outstanding during the year as compared with $1.88 per share in 1947.

Company-owned telephones in service at December 31, 1948 numbered 1,073,152, a net gain of 112,794 during the year. Unfilled orders for service numbered 121,000, about the same as a year ago.

A. T. & T. Plans Debenture Issue Up to $391 Million

American Telephone & Telegraph Co. will ask stockholders at the annual meeting March 20 to authorize what may well prove to be the biggest single corporate issue in U. S. history.

Directors of the company have voted to recommend stockholders authorization of a new convertible debenture issue. The issue would be offered on a pro rata basis to stockholders.

The amount of the issue is to be determined later, but it is not to exceed $100 of convertible debentures for each six shares of stock held. If the maximum offering were made, the issue would amount to $391 million, on the basis of the 23,475,779 shares of stock outstanding February 15.

An issue of $391 million would be the largest single financing operation in Bell System history, and probably in corporation history. Proceeds from sale of the debentures and from conversions into stock would be used to provide funds for the huge Bell System expansion program which has already cost more than $3 billion since V-J Day.

The new debentures would be dated June 20, 1949, A. T. & T. stated. Further contemplated details of the issue are: Interest at a rate not more than 3½%; maturity not later than June 20, 1964; convertibility into A. T. & T. stock at a conversion price or prices not exceeding $150 a share.

It is expected that final decision as to amount and terms of the issue will be announced at the annual meeting, A. T. & T. said. Proxies for the meeting will be mailed early in March.

A. T. & T. did its last financing in December, when $150 million of 25-year debentures, due 1973, were marketed.

The new issue of debentures would be the first convertible issue for A. T. & T. since November, 1947, when $357,532,600 of 10-year 2¼% convertibles were sold to stockholders. About $180 million of this issue has been turned into stock since it became convertible last March 1. About $70 million A. T. & T.'s 15-year 2¼% convertible debentures of 1961, originally issued in the amount of $343,087,700, have been converted into A. T. & T. stock.

The 10-year bonds are convertible into stock at $140 a share on surrender of one $100 debenture and $40 cash. The 15-year ones may be converted at $150 a share by surrender of one $100 debenture and $50 in cash.

The new issue, if made effective in the full amount of $391 million, would bring total Bell System financing since V-J Day to over $3 million. Prior to announcement of the new issue, A. T. & T. officials had stated that about $2 billion more of system financing would be needed to finance construction over the next few years.

Total Bell System financing in 1948 amounted to over $1 billion. In addition, the company last year offered a maximum of about 1.4 million shares of stock to employes under a payroll deduction plan. In 1947, the Bell System obtained over $1,100 million of new capital; in 1946, more than $550 million.

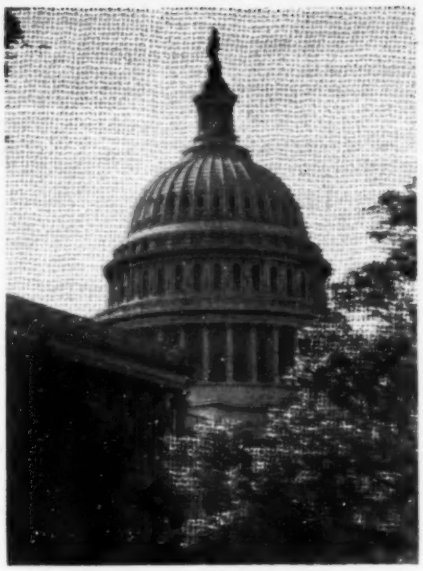
W. D. Gillen Elected President of Pennsylvania Bell

W. D. Gillen, vice president in charge of operations of the Bell Telephone Company of Pennsylvania, was recently elected president of the company at a meeting of the Board of Directors.

He will succeed Francis J. Chesterman, who presented his resignation to the directors after 44 years in the telephone industry. Mr. Chesterman, who has been president since November 1, 1947, retired at the end of February under the provisions of the Bell system pension plan. He will continue as a member of the Board of Directors.

The Directors also elected Edwin M. Clark, vice president in charge of personnel relations, as vice president,

(Please turn to page 72)



Washington Bureau REPORTS

BY ROLAND DAVIES and FRED HENCK

Poage Bill Approval By House, Appears Certain

HOUSE PASSAGE of the amended Poage Bill to authorize the Rural Electrification Administrator to make 35-year, 2% loans for rural telephone expansion and development appears to be a virtual certainty, following prompt approval of the measure, with a few changes, by the subcommittee which conducted the hearings, and by the full House Agriculture Committee.

Final enactment of the measure and passage of an appropriations bill making the funds available for the loans is much less of a probability, however, at least for the current session of Congress. It depends, probably, on the length of the Southern Democrats' filibuster against civil rights legislation and the speed with which the upper chamber acts on various important bills, including particularly the imperatively necessary funds measures for the coming fiscal year, starting July 1. Senate hearings on the Poage Bill and the comparable Hill Bill, introduced by the senior Senator from Alabama, no doubt will take some time.

As approved by the subcommittee and the full Agriculture Committee, the rural telephone legislation pending before the House contains amendments eliminating a few of the features to which the telephone industry, both Independent and Bell System, has raised objections. The final amendment tacked on the measure before full Committee approval was one which barred REA rural telephone loans unless a certificate of convenience and necessity is obtained from the appropriate state commission, in a move to guard against duplicate or competitive telephone systems.

This would apply, however, in only a limited number of states. There are about 29 state commissions with certificate powers, of which about 12 have regulatory jurisdiction over rural electric cooperatives at present.

The language of the final amendment was as follows: "*nor shall such loans be made in any state which now has or may hereafter have a state regulatory body having authority to regulate telephone service and to require certificates of convenience and necessity to the applicant unless such certificate from such agency is first obtained.*"

Amendments by the subcommittee headed by Rep. W. Robert Poage (D., Tex.), author of the bill, were more far-reaching. One of the major ones was the addition of the word "refinancing" in the list of purposes for which the REA Administrator can make loans for rural telephone systems, so that the measure now reads in part that loans can be "*for the purpose of financing or refinancing the improvement, expansion, construction, acquisition and operation of telephone lines, facilities, or systems . . .*"

Another change was as follows, with the revisions in italics: "Provided, however, that the Administrator, in making such loans shall give preference to persons *providing telephone service* in rural areas, and *to public bodies, cooperative, nonprofit, limited dividend, or mutual associations; and provided further, that for six months from and after the effective date of this act, no applications for loans shall be received by the Administrator except from persons who on the effective date of this act are engaged in the operation of existing telephone service in rural areas.*"

Another amendment was the addition of an entire new paragraph at the request of the National Association of Railroad and Utilities Commissioners, in an endeavor to safeguard state commission jurisdiction. It was this provision which was later strengthened somewhat by the full Committee amendment.

The new paragraph is as follows: "Nothing contained in this act shall be construed to deprive any state commission, board, or other agency of jurisdiction, under any state law, now or hereafter effective, to regulate telephone service which is not subject to regulation by the Federal Communications Commission, under the Communications Act of 1934, including the rates for such service."

In addition, the subcommittee changed the definition of telephone service, which originally had been so broad it could have been interpreted to include telegraph and radio broadcasting. These services are now specifically excluded from the definition of telephone service in the measure.

Agriculture Committee Chairman Cooley told *Telecommunications Reports* that he would seek a favorable rule from the Rules Committee promptly, but it was not expected that the rules body would take up the measure immediately. In the remote possibility that any Rules Committee opposition should develop, Chairman Cooley, under the new House procedure, could call the measure up for floor consideration after 21 days, anyway.

One other development on the rural telephone front came at a meeting of the NARUC Executive, Legislative, and Cooperation Committees in Washington. The NARUC leadership reaffirmed a resolution passed at last year's Savannah convention directing the Association legal officials to appear before any Congressional committees considering rural telephone legislation to make sure that state commission jurisdiction is protected. This would apply now to the Senate hearings probably on a House-approved Poage measure and the bill offered by Senator Lister Hill, the original Congressional sponsor of a rural telephone law, which has the same principles as the Poage Bill.

NARUC To Discuss Separation Procedures

WHAT IS felt by state regulatory commissions to be an existing and growing disparity between intrastate and interstate toll telephone rates, leading naturally to consideration of revised separation procedures which would put a greater share of the total investment in and cost of

providing telephone service on interstate toll traffic, is expected to be a major subject of discussion at a special meeting of the NARUC Special Telephone (Commissioners') Committee this month.

The meeting was scheduled for March 22 by Matt L. McWhorter of the Georgia commission, Chairman of the NARUC group, immediately following the adoption of a resolution by the NARUC leadership at a meeting in Washington calling for continuation of the work of the Special Telephone Committee. The meeting of the commissioners will be with the FCC-NARUC staff groups on telephone matters, and in cooperation with the FCC.

In preparation for the Commissioners' Committee meeting March 22 with the FCC and staff representatives, the FCC-NARUC telephone staff committee convened at the FCC offices in New York Monday, March 14. The meeting will continue through Friday, and will be resumed in Washington the day before the session with the commissioner. Subjects under consideration will include Western Electric Co. earnings for the year 1948 by product classes; the committee budget for 1949; depreciation charges and other reserves; general discussion of Western Electric; pro rata charges for the Bell Telephone Laboratories; and the review of separation procedures and the divergences between state and interstate toll rate schedules.

President Richard Mittelstaedt of the California Public Utilities Commission has been selected to replace Andrew J. Zimmerman, until recently Director of the Washington State Department of Public Utilities, on the Commissioners' Committee. Other members, in addition to Mr. McWhorter, are Commissioners Ray O. Weems (Okla.), Kyle Williams (Mo.), and B. Frank Morgal (Pa.).

The A. T. & T. Long Lines Department rate of return, it is understood, was slightly above 6% for the full year 1948, but was a declining rate in the latter stages of the year, and for early 1949 has been about 5%. Revised separation procedures applying a greater portion of property and expenses to interstate toll service would, of course, further reduce the rate of return at present rates. The rate increases which have placed some intrastate toll rates above those for comparable or longer interstate distances have come about through carefully-considered state rate proceedings. In several intrastate rate decisions, the commissions have voiced the belief that separation procedures should be revised to place a heavier share of expenses and plant investment on the interstate services.

CWA To Vote On CIO Affiliation

WITH endorsement, either in convention or by their governing boards, by 17 divisions of the Communications Workers of America of the recommendation by the CWA Executive Board that membership of the telephone union vote for affiliation with the CIO, the labor organization leadership now has entered its 60-day referendum period on whether it should unite with the CIO or remain independent.

In the referendum, the estimated 230,000 telephone workers represented by the union will be given the opportunity to vote on affiliation. The referendum will wind up on May 5, and its results are expected to be announced within a few days from that date. It is the consensus of the Washington labor press that a favorable vote on affiliation is assured.

Assuming the favorable vote, a joint committee of the CWA and the CIO Telephone Workers Organizing Committee will meet to make plans for the amalgamation of the two groups. The TWOC has several major groups under its banner, mainly the Long Lines workers and Western Electric installers, and the merger would give CWA, under the CIO banner, the vast bulk of the nation's telephone workers who are union members. Plans for the amalgamation are to be completed in time for approval by the CWA annual convention, slated for Chicago in June.

Meanwhile, declaring wages paid to traffic employees in the telephone industry are "sub-standard", the CWA has announced that it will seek "fourth round" pay increases, with the first demand to be made against the New Jersey Bell Telephone Co. by the division representing that company's traffic workers.

In the Bell System as a whole, however, the wage increase campaign, apparently launched mainly on a study of state agencies' statistics on "minimum budget levels" for workers, cannot get fully under way until late fall. Most of the contracts between the CWA and the Bell System companies provide for wage reopening periods which will not be reached, for the most part, until October through December of this year.

CWA President Joseph A. Beirne said the decision to seek higher wages in the telephone industry was made by the union's Executive Board at a recent meeting. He said all divisions of the union had been directed to make preparations to "press militantly for a 1949 series of wage increases in the telephone industry."

Television

THE BELL SYSTEM in 1949 will double the number of miles of its television network channels now

(*Please turn to page* 62)

Coming Conventions

Kentucky Independent Telephone Association, Phoenix Hotel, Lexington, March 15.

Texas Telephone Association, Baker Hotel, Dallas, March 21-23.

Ohio Independent Telephone Association, Neil House, Columbus, March 28-30.

Iowa Independent Telephone Association, Fort Des Moines Hotel, Des Moines, April 5-6.

Executives Conference, United States Independent Telephone Association, Edgewater Beach Hotel, Chicago, April 11-12.

Nebraska Telephone Association, Lincoln Hotel, Lincoln, April 19-20.

Illinois Telephone Association, Hotel Pere Marquette, Peoria, April 27-28.

Indiana Telephone Association, Claypool Hotel, Indianapolis, May 4-5.

Pennsylvania Independent Telephone Association, Abraham Lincoln Hotel, Reading, May 9-10.

Kansas Telephone Association, Jayhawk Hotel, Topeka, May 17-18.

New York State Telephone Association, Jamestown Hotel, Jamestown, May 25-26.

Oregon Independent Telephone Association and Washington Independent Telephone Association, Davenport Hotel, Spokane, Wash., June 17-18.

California Independent Telephone Association, Biltmore Hotel, Los Angeles, June 23-24.

THE MARKETS for NEW CAPITAL

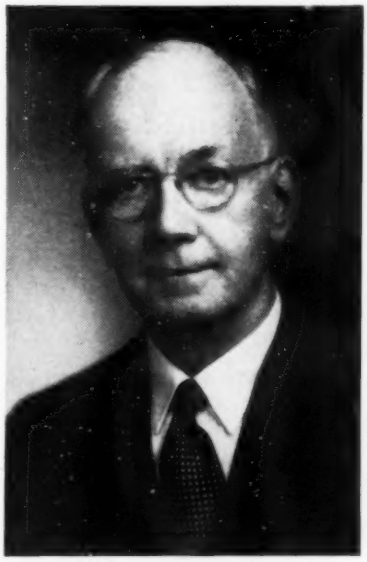
By
ALBERT W. KIMBER

GRASS ROOTS are the most abundant growth we have in this country, they are the most widely distributed, the hardiest. Grass roots capital is like that. There is more of it than there is capital in Wall Street. It is to be found almost everywhere, in some areas more than is needed for local support and development, in some other areas insufficient for the rapidly expanding economy; and a few sparsely populated section are even poor in capital accumulation, but—

Savings of individuals in this country in 1948 were employed in part in the purchase of $7.3 billions of series "E" savings bonds alone, an amount which exceeds the $6.0 billions aggregate of all corporate bonds and stocks reported as issued for new capital and sold in the country during that year. And a large proportion of these "E" bonds was bought by people who regard them as the equivalent of a cash reserve available at any time for other use; this is indicated by the 1948 redemptions, at holders' demand, of $6.8 billions of the same bonds of earlier issue.

During the eight years 1940-1947 inclusive, according to Securities & Exchange Commission reports, individuals throughout this country accumulated savings of $86 billions in currency and bank deposits, $55 billions in life insurance, savings and loan association and other similar funds, and $57 billions in government bonds. The currency and bank deposit savings alone would be more than enough to buy (at market prices January 31, 1949) all of the stocks listed on the New York Stock Exchange, which were valued as of that date at $67.5 billions. But in fact the grass roots would not have to buy them, because they owned most of them already.

Studies to show exactly where the wealth of this country is now owned, or where the liquid capital is held, are not complete. As to common stock:



A. W. KIMBER

(a) American Telephone reported for 1947 that of its 723,374 stockholders more than 50,000 were located in each of six states, that over 5,000 were located in each of 26 other states, and that no state had less than 600 of its stockholders.

(b) Another important utility has analyzed for private use its list of stockholders at the end of 1948, and found that 16% of the individuals holding 25% of its common stock were located in New York City and State, and 20% of the holders owning 20% of the stock were located in New England; others in every state of the Union.

(c) The National Association of Security Dealers reports that in 1948 there were 1,260,421 holders of the 362 most active over-the-counter stocks, an average of 3,482 per issuing company, and that 17.3% of the total were located in New York State, 10.5% in California, 9.5% in Connecticut, 9.1% in Pennsylvania, and 8.8% in Massachusetts, others in every part of the country; this study excluded all stocks of strictly local interest, or where ownership was concentrated in a single state.

(d) The largest brokerage firm of the New York Stock Exchange states that in 1948 only 23% of its stock commission business originated in the States of New York, New Jersey, Pennsylvania and New England combined, with 77% from points scattered over the rest of the country. This firm did 9% of the total of such business transacted on the Exchange, and mathematical statisticians would consider 9% a fair sample for further calculation, but the precise correlation of trading activity with ownership is not known.

It is obvious that holders and buyers of the common stocks of our big corporations are to be found in every state of the United States, and of course most of the stocks of the smaller companies are locally held.

Grass Roots Capital

AND GRASS roots capital is the hardiest. Consider for example the pressure that the stock of Detroit Edison was under during the past twelve months. During that period there were six separate formal public offerings of the stock aggregating 1,447,000 shares at prices which in each case was the current market: also there were 33,779 shares distributed as dividends; all of this was for account of other companies which had held the stock for years. The result was an increase of nearly 27% in the number of shares held by the general public. And in November the company offered its stockholders $46,649,500 convertible debenture 3% due 1958; all but $1,970,000 were taken by the stockholders at 100, the small remainder was sold to the public at from 104.875 to 105.50.

Lately the debentures have beeen selling on the New York Stock Exchange at 108. The price of Detroit Edison stock in 1948 ranged between 20 and 21.75, got as high as 22 this February, and is currently at 20.50.

The reason for the persistent stability of the market price of this stock, in face of unsettled conditions in the market prices for stocks generally, was the high regard in which the Company and its management were held in the service territory. It was in this territory that most of the stock was placed.

New capital requisitions by the telephone and electric utilities in 1949 through sale of new securities promise at this time to be larger than they were in 1948, partly because the huge improvement and expansion programs will continue and in some cases be augmented, partly because bank loans made for the purpose in 1948 and earlier will have to be repaid from proceeds of permanent financing, partly because funds of internal generation will probably be relatively smaller. Some big drafts on the capital supply will be made during the next few months. American Telephone is making ready to offer $391 million of new debentures to its own stockholders, the debentures are to be made convertible into stock of the company. Pacific Telephone & Telegraph plans to offer 828,920 shares of common stock to its stockholders at $100 per share; it will be recalled that a similar offering last June, but of 601,262 shares, was a failure, for of the 80,613 shares available for stockholders other than its parent only 16,376 shares were taken up. But company's earnings picture now appears much more favorable than it was then, earnings per share for the full year 1948 showed at $6.29, sufficient to cover the $6 per annum dividend which was restored last June. And the rate increase granted company in late February should help. But the stock still sells in the market around 94, and company has to finance an expansion program estimated to cost over $300 million in 1949-1950.

But plenty of capital will be available. National income in the United States in 1948, that is, the earnings of residents from profits, wages, dividends and other sources, is officially estimated at $214 billions, an increase of $18 billion over 1947, and in December was running at the rate of $220.8 billions per annum. For the first nine months of the year the savings of individuals, though not all in liquid form, are estimated at $24.9 billions.

Table One—Telephone Company New Capital Issues

December, 1948 — February, 1949

Bonds and Debentures	Amount	Price	Yield
Alabama Telephone (Fayette, Ala.) 1st 4.75% 1974	150,000†	100.00	4.75
American Telephone & Telegraph Deb. 3.375% 1973	150,000,000	101.61	3.28
Dixon Home Telephone Co. (Illinois) 1st 3.50% 1973*	500,000†	100.00	3.50
Harrisonburg Telephone (Virginia) 1st 3.50% 1967*	100,000†	100.00	3.50
Interstate Telegraph (Nevada) 1st 4% B 1998	1,000,000†	100.00	4.00
Jamestown Telephone Corp. (N.Y.) 1st 3.375% C 1967	400,000†	100.00	3.375
Middle States Telephone (Illinois) 1st 3-½ E 1975	500,000†	100.00	3.50
New Brunswick Telephone Co., Ltd. Deb. 3.375% A 1973*	1,500,000	101.27	3.30
Orange County Telephone (N.Y.) 1st 3.25% B 1978	350,000	100.00	3.25
Rochester Telephone Corp. (N.Y.) Deb. 4% 1963	8,500,000	102.00	3.82
Saguenay Quebec Telephone 1st 3.75% C 1973	800,000	100.00	3.75
State Telephone (N.Y.) 1st 4% 1973	150,000†	100.00	4.00

Preferred Stocks	Number of Shares	Price	Yield
Eastern Indiana Telephone 5% pfd. $100 par	3,000	100.00	5.00
Lycoming Telephone (Pa.) 4-½% pfd. $100 par	1,000	102.00	4.41
United Telephone Co. of Pennsylvania 4.50% ptd. $100 par	6,000	100.00	4.50

Common Stocks	Number of Shares	Price	Yield
Bell Telephone of Canada $2 com. $25 par	1,030,000	33.00	6.05
Columbia Telephone (Pa.) $2 com. $25 par	3,000	40.00	5.00
Inter-Mountain Telephone (Va.) $0.60 com. $10 par*	95,000	10.00	6.00
Lexington Telephone (N.C.) $7 com. $100 par	750	100.00	7.00
Los Gatos Telephone Co. (Calif.) $0.80 com. $10 par*	11,550	16.00	5.00
Northern Telephone Co. Ltd. (Canada) $0.10 com. $1 par	250,000	1.00	10.00
Sunland-Tujunga Telephone (Calif.) $2 com. $25 par	14,000	25.00	8.00
Western Light & Telephone (Kansas) $2 com. $10 par	47,206	20.00	10.00

Notes: †Private Sale. *Offered in preceding period, details not then available.

Our list (*Table I*) of telephone company new capital issues this time includes an unusually large number of issues made by small companies and sold locally. Among the most remarkable were the sale of common stock on a 5% dividend yield basis by two small companies, Columbia Telephone of Pennsylvania and Los Gatos Telephone of California. This last named company sold its entire issue to present stockholders or those who purchased their rights; no stock was left for general distribution. This company has paid dividends of 80c per annum per $10 per share since 1911 and has never missed a quarterly dividend.

Another striking performance was that of Sunland-Tujunga Telephone Company of California. This company owns and operates one of the smaller Los Angeles area exchanges and emerged from the war with 1722 stations in service and a total capitalization of $100,000 in common stock. At the present time it has 4,400 stations in service with prospects of 6,000 by the end of 1950. Since the war it has made complete conversion from manual to dial operation and has trebled its outside plant and station equipment.

To finance this growth the company has placed at private sale in various installments 3% to 4% bonds running from 20 to 25 years, 8,000 shares of 5.25% preferred stock $25 par, and has increased its common stock to 27,000 shares of

$25 par. Its last sale of securities was in January 1949, when it offered 14,000 shares common stock at par to its stockholders and others in California. The stock was quickly sold across the counter by the company itself, at practically no cost of issue. As a result of these transactions the company's capitalization is as follows:

	Amount	Per Cent of Total
Long Term Debt	$ 525,000	35.2%
Preferred Stock 5¼% (8000 shares)	200,000	13.4
Common Stock (27,000 shares)	675,000	45.4
Surplus	90,000	6.0
	$1,490,000	100.0%

The circular issued by the company in connection with its recent offering of common stock is noteworthy in that it makes full disclosure of the cash outlays which have to be made for all charges ranking prior to dividends on the common stock, including payments on account of principal of debt. Most statisticians show the amount applicable to common stock as the balance of total income remaining after deduction of bond interest and other income charges and preferred dividends, a showing which in this writer's judgment may be misleading. Sunland-Tujunga told the whole story.

For an example in contrast consider the experience of Colorado Central Power Company. This little concern also had and still has an expansion program. In 1946 it placed at private sale $1,000,000 of 2.785% bonds at 100, in 1947 an additional $200,000 on the same terms. In February 1948 company sold a further $600,000 bonds at 100, but these had to carry a 3.375% coupon. All these bonds were of 30-year term. In December 1948 company sold $600,000 more bonds, also at 100, but this time had to shorten the maturity to 15 years and attach a 3.875% coupon. At the end of 1948 company's capital issues consisted of $1,080,000 of common stock, capital and earned surplus combined (partly estimated) and $2,500,000 of long term debt. Operations have been profitable, earnings per share in 1948 higher than in 1947, and dividend rate on the stock maintained, but the disproportion of debt in the capital structure results in higher per annum bond money cost, lower fixed-charge coverage, and lower quality for both bonds and stock.

New Bond Issues

THE CONTESTS between sellers and buyers of utility bonds that were described in these columns six months ago continued during the last three months, particularly where the big life insurance companies were concerned. And the life insurance companies are very important people in the corporate bond market; last year their combined purchases were $4,732 millions of the total $5,319 millions of new corporate bonds offered for new capital or refunding. The larger institutions have tried to hold their 3% yield line, refusing to buy their usual blocks of offerings that yielded less. Thus the Public Service Electric & Gas $50,000,000 of 3% debentures 1963 offered in November to yield 2.90% were only 60% sold at the end of a month, and the syndicate was extended; the Consolidated Edison of New York $50,000,000 of 3% 1979 offered in January to yield 2.88% were only 40% sold when the syndicate closed after four weeks, but the big institutions came in later and bought substantial blocks at various discounts. When the Duke Power $40,000,000 of 2.875% were offered in February on a 2.81% basis no big institutions bought, but the underwriters were able to place all the bonds with smaller insurance companies, commercial banks, savings banks and others; the sellers thus came off fairly well, aided by a general bond market which was on the uptrend during most of the period.

Telephone company bond offerings during the period were generally successful, notably the $150,000,000 American Telephone 3.375% debentures which were quickly sold. The realistic pricing of this issue contributed greatly to its success; the coupon rate is the highest carried by any of the company's outstanding bond issues. It may be noted that our list this time shows no offering yielding less than 3.25%, and that most of the smaller issues were placed at private sale. Bond money for telephone companies costs more now than it did six months or a year ago; but nothing in the outlook suggests much higher costs in the near future.

Preferred Stocks

THE TONE in the utility preferred stock market has improved greatly during the past three months, but that improvement is predicated entirely on the higher prices at which already outstanding utility preferreds have lately been selling. Many of the issues marketed during the first six months of 1948, for example, and which later in some cases were bid as low as ten points or so under their offering price, recovered some of the lost ground, and a few of them even advanced to prices a little higher than the original offering price. But this does not mean that the market for new issues of preferred was much more encouraging.

Outstanding issues of any type of security, after the unsettlement which may attend the period immediately following the original offering, advance or decline as the result of decisions made by investors in places that are scattered over the country. Each of these persons decides either to sell what he has bought, or to buy what he neglected or refused to buy on the original offering. If the supply of such issues is curtailed, and buying demand becomes strong, the price naturally advances. This is what has been happening in the preferred stock market during the past few months. But an offering of new preferred stock cannot reach very far over the country unless the issue is large enough to support the cost of organizing and managing a big syndicate to place the stock. A small issue cannot stand that expense, and most of the preferred stock issues offered or under negotiation for utilities during the past few months have been comparatively small.

For the last three months we are able to report only three preferred stock offerings for telephone companies, all of them small but all placed at dividend-rate costs relatively favorable to the issuer. All three of these issues were offered and placed locally.

New Common Stocks

NEW OFFERINGS of common stocks during the period met with insistent demand, despite the downtrend in the common stock market which prevailed for most of the time since early January. For example: The January offerings of Bethlehem Steel, 627,960 shares at 32.50, and the Southern Indiana Gas & Electric 85,000 shares at 19.50 were all sold in one day, although the latter was a big offering for a new name. To insure the success of the big Koppers offering in January, 400,000 shares at 31, a country-wide syndicate of 75 dealers was organized; only a handful of them got enough stock to fill the orders of their cus-

(*Please turn to page* 58)

Splicers often work throughout the night to prevent interruption of telephone service.

Modernization of Splicing Practices

Would Improve Service and Lower Costs

A splicer with many years experience takes a close look at splicing routines and decides there is no branch of telephone work that needs more attention and modernizing.

By J.W. Channell

President, Channell Splicing Machine, San Marino, Calif.

ONE-FOURTH of all the money invested in the telephone business is spent on cable and its associated plant. This statement was made some years ago in one of the telephone journals and is no doubt true at the present time. For the improvement of telephone service and the reduction of cost there is no branch of the system that needs more attention and modernizing than the cable craft. There are now modern tools and methods known that would, if put in practice, improve the service and would reduce the cost over 50 per cent.

Some 50 years ago when cable splicing was in its infancy plumbers were borrowed to do the cable work because they could wipe the solder joints. When the plumbers finished a cable, telephone men installed the service. This practice started cable splicing off as a step-child in the system and like "Topsy" it has just grown with the business. Very few and in some companies no splicers are advanced higher than a third level supervisor's job, therefore, higher management does not have the contact or knowledge of splicing necessary to bring it up-to-date and keep cable splicing on a par with other telephone crafts.

Time and space does not permit a complete review of all the ills in our splicing craft, as subjects headed Service, Costs, New Methods, Tools, Material, Safety, Engineering, Transportation, Training, Accounting, Organization and many others could be written, so we will take just one item from each classification and see if it does not bring out the fact that we need to modernize the splicing craft.

Service

For many years one of the weakest parts of our telephone plant has

been the hand splices made in our cables, and as a circuit is no better than its weakest splice, this looks like a number one item to modernize. The present practice of sending a man to a splicing school for a few days, then giving him a pair of electrician's scissors and putting him out in the field twisting the wires by hand lends itself to a lot of haywire splices and trouble.

In the heavier gauges or any part of a toll circuit the hand method makes it necessary to solder each splice after twisting. This often causes trouble as the wires are not tinned and sometimes the splices have to be opened and every wire resoldered; also a sharp point of solder may be left on the twist that causes trouble. The popping and cracking of our circuits is often caused by loose wire splices during the expansion or contraction of our cables due to temperature changes.

In order to prove there is a need for modernizing our splicing we suggest that you take several splices that have been removed from plant, open them up, and carefully examine each splice and see if one wire has slid in the twist, check the length, number of turns, and, if soldered, the quality of workmanship. It may also be interesting to review the number of bad pairs recorded in your plant. After this test we believe you will agree that the present hand method of splicing is very crude, expensive, and does not compare with the modern service we are selling.

For some time there has been a machine for splicing cable, making factory splices as good as the cable itself and at less than one-half the present cost. These machines would help eliminate held orders and give new subscribers service.

Costs

Many years ago we reached the peak in production of the hand method of splicing and since then the cost has been increasing. Taking just one type of splice as an example, a 455 pair—19 gauge soldered splice on loaded trunk cable that took an average of 48.8 man-hours per splice in 1932 now requires an average of 133 man-hours, or from a cost basis of $63.00 in 1932 to $222.76 in 1947. It is possible with modern methods and tools to make these splices now in 36 man-hours at a cost of $72.00 per splice. As a trial one of these splices was completed in 4 hours and 46 minutes with a machine. In a field trial a splicer with less than a month's experience made 20—455 pair—19 gauge splices in 20 days with a machine. Twenty splicers with machines (only one had over 3 months experience) made 191—455 pair splices in an average of 38½ man-hours per splice. This time included training, foremen, truck drivers, splicers, helpers and megger testing. The trial is still in progress and the time is improving.

New "M" Type cable splicing machine completed this splice in 4 hours and 46 minutes.

From a survey made on 6,500 cases of cable trouble the results showed that 16% of all cable trouble was found at terminals, and consisted of cracked stubs, cut by clamps, cut by ties, bad seams, spur holes, cracks at end of sleeves and defective joints. It is frequently necessary that these terminals be removed from plant because of size, this disturbs the service and is an expensive operation.

For some time there has been a terminal available that does not require splicing, lead sleeve, clamps, ties, solder joints, terminal stubs and can be enlarged without removing from plant. These terminals can be placed in plant for much less money and will reduce maintenance.

Modern Tools and Equipment

The linemen have modern trucks, sleeve rolling tools (although they do not make many splices) pole derricks, winches, and many other modern tools. The installer and repairman have a tool for making their splices and they make very few splices. They also have many other modern tools. A book could be written about the improved tools necessary to bring the splicing craft up to date, but we will only discuss one at this time.

The plumbers brought their furnace into our business and about the only improvement made in the past 50 years is that a pump has replaced the rubber bulb. They were not designed for outdoor work and a large windshield had to be added.

There is a furnace available and now used by the other utilities that does not require a windshield, filling or generating, and on a field trial proved that it saved one hour and 23 minutes per splicing crew per day. This tool would help to modernize the splicing craft.

We can not think of a piece of equipment that requires soldering in the field that is not tinned at the factory, but the splicer is sent the raw material and he spends some time preparing it for use. Take a lead sleeve as an example; the splicer is fortunate if he receives the sleeve drifted round, it is generally flat and the helper pounds and beats until he gets it in shape, then he puts the sleeve on the end of the cart, generally out in the busy traffic and takes a plumber's shave hook and shaves each end for about 4 inches. If he leaves one small streak that is not clean it may be the cause of a cable failure and many lines out of service. A more modern way to prepare these sleeves would be to prepare them at the factory, as follows:

(1) *Drift sleeve and place on wooden core.*
(2) *Turn on lathe taking 4-inch cut on each end.*
(3) *Dip ends in hot pot of tin.*
(4) *Solder any valves or connections required on sleeve.*
(5) *Split sleeve if required on power saw.*
(6) *Place hard paper core in sleeve.*
(7) *Wrap in heavy paper and send to field.*

This is only one of many material items that would help modernize the splicing craft.

The best way to reduce accidents

(*Please turn to page* 42)

THE LEICH TELEPHONE

TRANSMISSION and REC

SPECIFICATIONS

Leich Common Battery Telephone

RINGER	Leich Code 32. Two-toned gongs, easy adjustment, permanent cobalt steel magnet.
TRANSMITTER	Western Electric Code F-1.
RECEIVER	Western Electric Code HA-1.
INDUCTION COIL	Leich Code 27. Maximum talking efficiency on both long and short lines.
CONDENSER	Leich Code 58-A. Assures longer life, hermetically sealed against moisture.
HOOKSWITCH	Leich Code 4-A. Carefully engineered and tested for positive operation whether telephone is used for wall or desk model.
TERMINAL PANEL	Leich Code 011899. All terminals securely clinched in position to eliminate turning and shorting.
CASE	Leich Code 011900. Bakelite. Good impact strength and lasting beauty.

Leich MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 190

RECEPTION...

the finest you've ever experienced

Here is the "talkingest" telephone you have ever used. Here, in this new Leich telephone, are transmission and reception the likes of which have never before been available in a telephone instrument.

The capsule type transmitters and receivers are recognized as the best available to the telephone industry.

Veteran telephone men — real old timers — tell us they were positively amazed at the improvement in transmission and reception when they installed these Leich telephones.

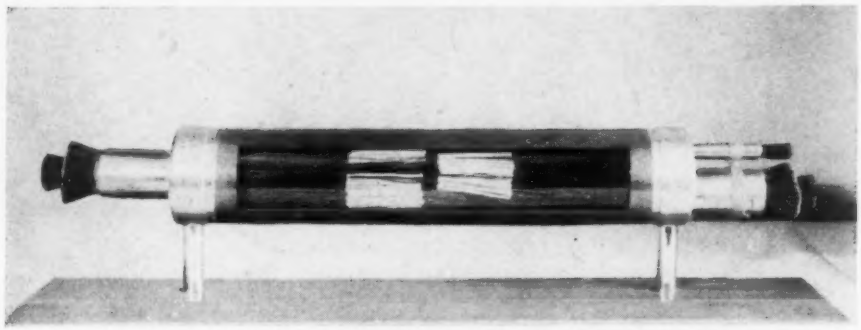
May we suggest that there is one best way to test transmission and reception. And that is... to install just one of these Leich telephones on your line and compare it critically with whatever telephone you have been using.

And, Mister Telephone Man... if you are not positive that this is the clearest, highest fidelity transmission and reception you have ever experienced ... just tell us so and we will return the purchase price to you.

We mean it. Leich Sales Corporation, 427 West Randolph Street, Chicago 6, Illinois.

AND DON'T FORGET

This Leich common battery telephone can be used as a desk or wall model. There's nothing to change, add or buy. Just hang it on the wall or set it on a table. This feature makes your Leich telephone more convenient and practical.



Modern splice with cast joints.

is to remove the cause. There has been much progress made in the reduction of accidents but let's take a look at the splicing craft and see what could be improved.

It is often necessary for a splicing crew to work in a hazardous location. For example, the center of a busy street. Due to present standard methods and tools they camp like Gypsies over the manhole for several days, making a splice that could be made in one day with modern methods and tools. Another example is a splicer wiping a large sleeve. He is given a white hot pot of solder, a ladle, a piece of bedticking (folded several times) and he pours the hot solder on the sleeve (that is not tinned) and tries to catch it with the bedticking in the other hand. He has just been told by his foreman to be careful as "we have a safety drive on this month."

The plumbers years ago discarded this method of wiping joints, and there is one better method known for casting joints, covered by patent issued February 11, 1936. If a Safety Supervisor wants to see an accident before it happens we suggest that he watch a splicer's helper split a small sleeve with a saw following standard practices, or visit a splicing school and watch a student wipe a large joint.

Engineering

Substantial improvements could be made in the splicing craft. However, very few engineers have had experience in cable splicing, and with the exception of one, we know of no schools that teaches this subject. Taking just one item; eliminating unnecessary splices; it is possible to design exchange manholes so that some cables will only have to be spliced in every other hole, and office manholes in some cases are not necessary. This would eliminate a splice in every cable entering the vault. There are various other places in plant where splices could be eliminated, thus saving splicing costs. A big improvement in splicing would result if the engineers followed from start to finish their jobs in the field.

Transportation Facilities For The Splicer

The splicer is about the only outside telephone employee that is not mounted. The line crews have modern trucks with 5-men cabs; the installers and repairmen have cars and they are all a credit to the company, but the splicer works out of a cart, gets to and from the job the best he can and often when he needs transportation in connection with his work he uses his own car and turns in car fare. In cases of accidents this is always embarrassing to all concerned.

It has been difficult to prove in cars for splicers because they are moved to the job and due to the crude method of splicing they are there a week or more, however, even then there is considerable lost time waiting for moves and material. On a field trial where the splicers were each given a splicing machine six splicers completed from 18 to 21, 455-pair splices per 5-day week, and although the foreman had a material truck they both could not prevent the loss of time waiting for moves and material. It was found that the splicers could complete a splice a day if they were moved the first thing in the morning. The results of the trial showed that six splicers with just one modern tool each turned out the production of 18 splicing crews splicing by hand. If they had been mounted the results would have been better as it would have allowed the foreman more time to supervise the job.

For better production the modern cable splicer should be given a car designed for his craft.

More Training Better Accounting

In most companies the only men given training in splicing operations are the helpers, splicers and foremen. We believe that if the people directing, engineering, writing practices, and supervising splicing were given the training, we would have many changes in methods and tools for doing the work.

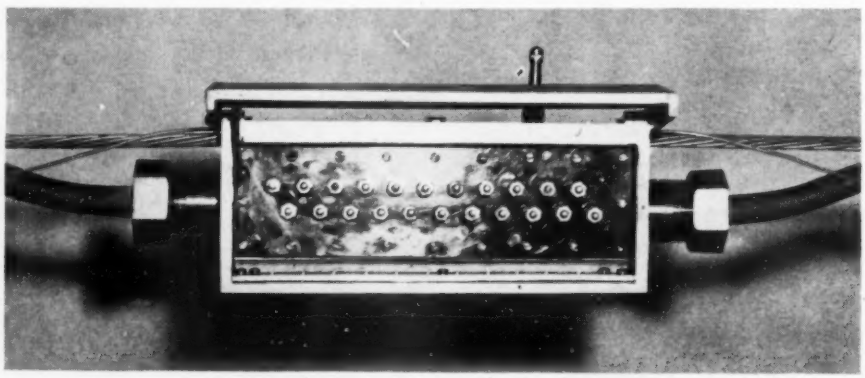
One of the first things necessary to improve our cable work is a system of accounting that will show the cost of various units, for example: a 1,212-pair straight splice, 26-pair terminal, 909-pair transfer. This would be the best modern tool that could be given the foremen for supervising his job, but should never be used for competitive purposes. If the various work units were numbered the splicer could charge his time to them, separating the premium time, and from his hourly rate the cost could be established. This would be a big help to the Engineers in estimating future jobs.

During the progress of work if the splicing costs get out of line they could be readily seen and corrected and it is just good business to know what the splicing costs.

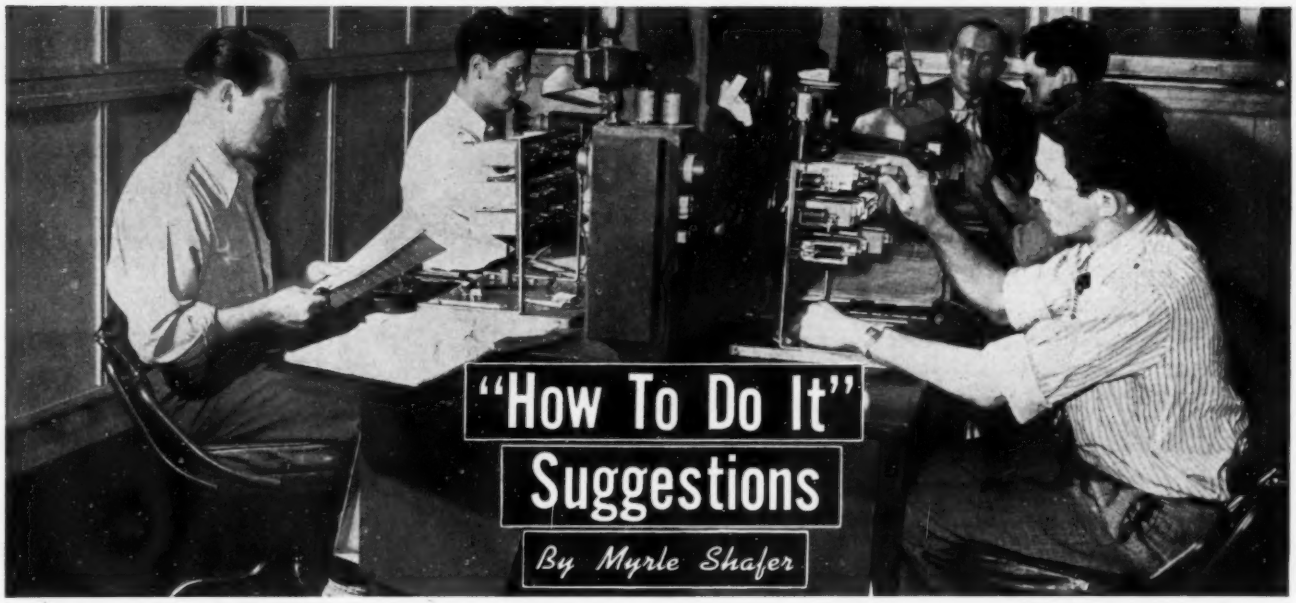
Conclusion

In most companies a splicing foreman is given from 8 to 12 splicing crews to supervise. We found that

(*Please turn to page* 64)



Cable terminal that does not require splicing, lead sleeve, ties, solder joints, or terminal stubs and can be enlarged without removing from plant.



"How To Do It" Suggestions

By Myrle Shafer

Radio Used In Line Construction

POWER COMPANIES have discovered that portable two-way radio sets operating on the frequencies now available to utility companies are very useful in reducing the time required for certain construction operations. Radio has been particularly effective in enabling the foreman of a large wire stringing project to coordinate the activities of several crews.

Transmitters and receivers are arranged in each line truck and when a question of procedure or method comes up the foreman can quickly be contacted by radio and can give the necessary information or move to the spot that needs attention and give advice. This system is very useful when "sagging-in" wire. It would seem that similar use of radio might be made in the telephone field as our problems are somewhat comparable to those in the power field.

Telephone companies should take full advantage of opportunities to make use of radio as it is only by so doing that a working familiarity with radio operating and maintenance techniques can be acquired.

Locating Fault in Branch Splice in Cable

SOMETIMES in using a Wheatstone Bridge to locate a fault in a a length of cable, the fault is found to be at the junction of the main pair into the branch pair. Before opening the branch splice at this point it is advisable to transfer the strap from the end of the main pair to the end of the branch pair and make another determination of the fault location as indicated in Figure 1. The reason for this precaution is that the fault maybe at any point along the branch pair and yet appear to be at the junction of the branch pair and the main pair. Shifting the strap to the end of the branch pair will locate the fault in this pair. If the fault is actually in the splice to the branch pair, this test will so indicate.

Soil Conservation And Telephone Companies

MOST OF us are so concerned with our day-to-day activities that we may overlook major problems, which though not our immediate concern certainly are of real importance to us in the long run. One of these is "soil depletion." At first thought, this would seem a matter for the farmers and state agricultural groups. But it should be of equal interest to the power, telephone, and gas companies. Because of the dependence of most communities on the surrounding land it is important that farm land management be such as to insure the continued productiveness of the land. What happens when a soil is improperly used was graphically shown by what happened in the dust bowl areas in the west. Failure to consider the future resulted in hundreds of farms being abandoned and many communities suffered great damage. Much of this damaged land is now useful only for marginal grazing purposes. Telephone companies can help their communities by being active prime movers in local soil con-

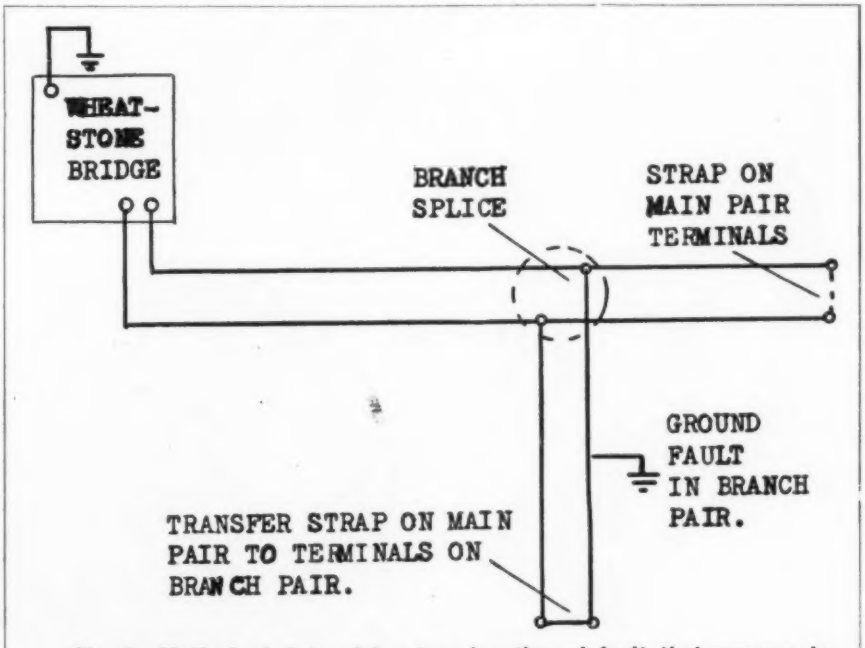
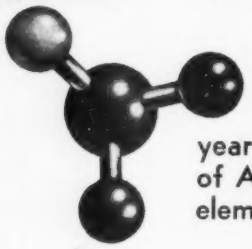


Fig. 1—Method of determining true location of fault that appears to be in a branch splice.

Structure for DEPEN



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servation activity. The importance of the soil depletion problem is driven home by the recent Book of the Month "Road to Survival". It is well worth reading. It has been shown that there is less than 2 acres of productive land per person in the world today and even this is rapidly shrinking. Soil conservation is a complex technical study in itself, however, the leading business men of a community can do a great deal of good by promoting interest in the subject and helping to get the farmers and the experts together.

Data On The New Fluorescent Sun Lamps

THE VALUE of the sun as a preventive for certain germ born diseases, as well as its general beneficial efforts on health are well known. Employees that are required to spend a great deal of their working day indoors would appreciate, particularly in the winter time, the opportunity to acquire a sun tan and to obtain the benefit of healthful ultraviolet rays. Telephone companies should therefore be interested in the new **fluorescent sun lamps** now available through the leading lamp companies. These lamps should prove particularly useful in employees rest rooms.

The newly announced fluorescent sun lamp which is more powerful than any "home type" ultraviolet lamp yet produced, and is suitable for bathing a wide area with ultraviolet light. The lamp looks like the regular type fluorescent. Its rays are soft and diffused so that it can be mounted overhead for uniform and economical room irradiation. The ultraviolet radiation is developed by a new phosphor powder which is coated on the inside surface of a special ultraviolet transmitting glass. The efficiency, in terms of ultraviolet radiation, is five times that of the screw-in bulb-type sun lamp. Mounted in a suitable reflector two feet away, the intensity is sufficient for a good tan. When mounted on the ceiling of operating rest rooms, etc., it will of course not produce a quick tan but will have beneficial effects and is a potent killer of cold germs.

Connection of Radio Link To a Wire System

SEVERAL readers have made inquiry as to the manner in which a two-way radio communication link can be connected to a two wire telephone system. These questions arise from the fact that a radio system is essentially a two path-four wire arrangement whereas a telephone system works on a one path-two wire basis. The problem generated by the connection of a radio link to the telephone system is similar to that created by the connection of an amplifying device, such as a repeater, into the two-wire telephone line. Special apparatus is required to separate the electrical currents from the two directions of transmission at the repeater (or radio terminating point) to prevent a "round house effect" whereby the amplifying tubes tend to feed output energy back into the input circuit and set up sustained oscillations.

But to get back to the question—the usual method of handling the receiving and transmitting paths of a radio system at its junction with a two-wire telephone line is by means of a hybrid transformer, or what is the same thing a four-wire terminating network. This arrangement is a form of the familiar A-C bridge. It electrically balances out the tendency for the output current to feed back into the input circuit. Fig. 2 illustrates schematically the basic features of this circuit.

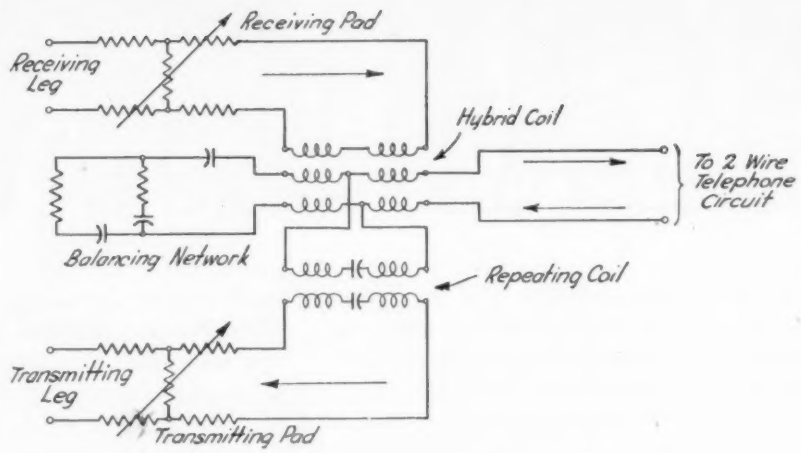


Fig. 2—Four wire terminating circuit.

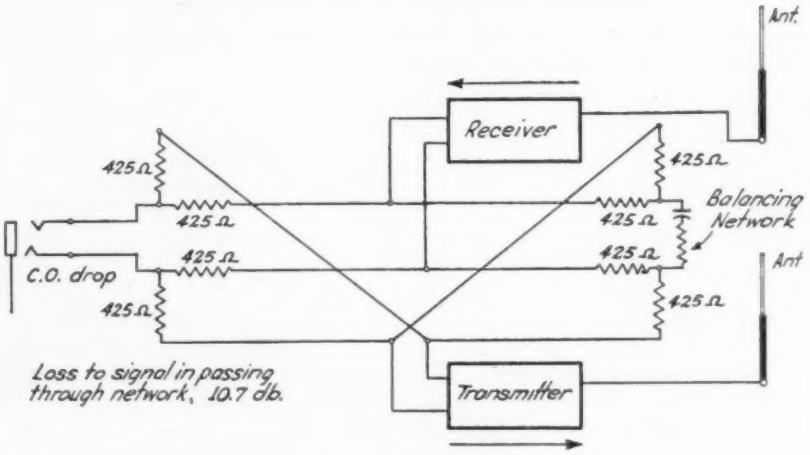


Fig. 3—Resistance hybrid terminating arrangement.

It is also feasible to isolate the receiving and transmitting legs of a radio link (or a repeater) at its junction with a two-wire telephone line by means of what is known as a "resistance hybrid". This balancing scheme makes use of 425-ohm fixed resistances instead of the usual hybrid transformers. A balance is obtained by virtue of the bridge circuit. A schematic of a resistance hybrid circuit is given in Fig. 3.

Rare Gas Relays Effective in Reducing Power Line Induction

WHENEVER a power line parallels a telephone circuit for some distance, there is apt to be noise induction picked up in the latter circuit, if some kind of ground connection occurs in the telephone circuit.

Ordinarily a metallic circuit is free from ground connections, unless one or more is accidently made, as in the

case of trees coming in contact with the lines. If, however, divided ringing is used to obtain selective or semi-selective ringing, the grounded ringers will cause noise currents to flow by upsetting the electrical balance of the circuit.

Inserting a Vincent rare-gas relay in series with each bell will cause the line to be normally free from paths to ground because the resistance of the relay is practically infinity below its critical breakdown voltage (sixty volts). The ringing voltage being higher, usually around eighty-five volts, this current passes through with little difficulty and the bells ring satisfactorily. A marked improvement in transmission is immediately noticeable due to this instantaneous action.

The rare-gas relay may be used on magneto or common battery lines, leaving the condensers in where they are used in the bell circuit. Either harmonic or coded bells can be used. The circuit diagram in Figure 4 shows a standard arrangement.

The gas-relay consist of a small glass tube containing a special combination of rare inert gases acting in contact with special metal electrodes which allow current to pass above a closely pre-determined voltage. The action of the relay is unaffected by frequency. Sufficient current is available to ring bells in a normal manner. This glass envelope is mounted in a heavy Bakelite shell for protection. The whole unit is mounted in a special holding clamp with the terminals of the relay presented at convenient points for connections. The relay is two and one-half inches long and one and one-half inches high when mounted. It fits easily in the bell box alongside of the ringer coil. It is only necessary to drill one mounting hole in the back to accommodate the self-gripping clip. In some of the new hand telephone sets where no excess is available, the rare-gas relay may be conveniently located at the ground connection or protector block without affecting operation in the least.

Having no moving parts, the rare-gas relay may be mounted in any position, and no adjustment is necessary. It is entirely enclosed, unaffected by dust or dirt and it is impervious to atmospheric or temperature variations.

The Vincent rare-gas relay is manufactured by the L. S. Brach Manufacturing Corp.

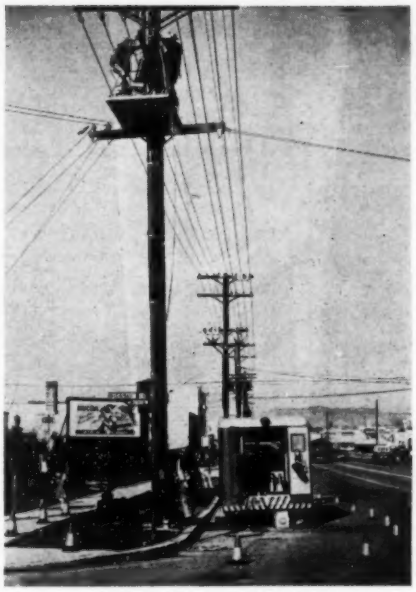


Fig. 5—New "Trafficones" enable traffic barriers to be established quickly.

New, Safe Rubber Traffic Cone

HAZARDS of present day traffic controls are lessened by use of new rubber Trafficone recently introduced by a California company.

The cones have the powerful appearance of steel yet are made of safe, collapsible rubber. Many of the heaviest traffic centers in the country have submitted the cones to severe tests and they have proved most effective.

One of the most outstanding features of the cone is its durable, flexible construction which means infrequent replacement because of breakage, distortion or wear. The lightweight construction makes them easy for a man to handle and it has been found that traffic barriers can be set up in 1/10 the time. Stacking each cone adds only one inch and many hundreds of them can be stored in a minimum of space. (Fig. 5.)

New Hand Type Wire Stripper

A NEW hand type, pocket size wire stripper called the "Stripmaster," features an "automatic" cam action that releases the jaws and allows the wire to be removed after stripping so crushing of stranded wire is completely eliminated.

Squeezing the handles of the tool causes it to grip the wire, cut the insulation and strip the wire—all in one operation. As the handles are released the grippers automatically free the wire and the jaws return ready for the next cut. There is no possibility of nicking or cutting the wire or fraying of wire ends.

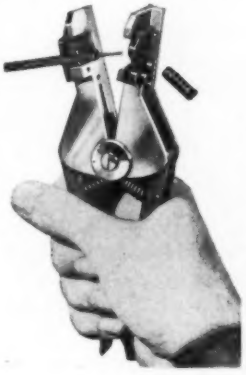


Fig. 6—New wire stripper features automatic cam action. Unit grips the wire, cuts the insulation and strips the wire in one operation.

The handles are comfortably shaped and have a narrow span to fit easily into any hand. Light (10 oz.) weight and minimum finger pressure enables the "Stripmaster" to be used all day without fatigue.

Just four models handle all wire gauges from Nos. 22 to 8. A fifth model is designed especially for FM and TV down lead wire. Blades are interchangeable on all models and can be taken off and replaced in less than one minute by removing two screws.

Help The Other Fellow

MAYBE you've just licked a tough problem. Or perhaps you're still sweating it out, but have at least explored and eliminated some of the blind alleys. Why not outline your problem with its solution, in a letter to the "How To Do It" department?

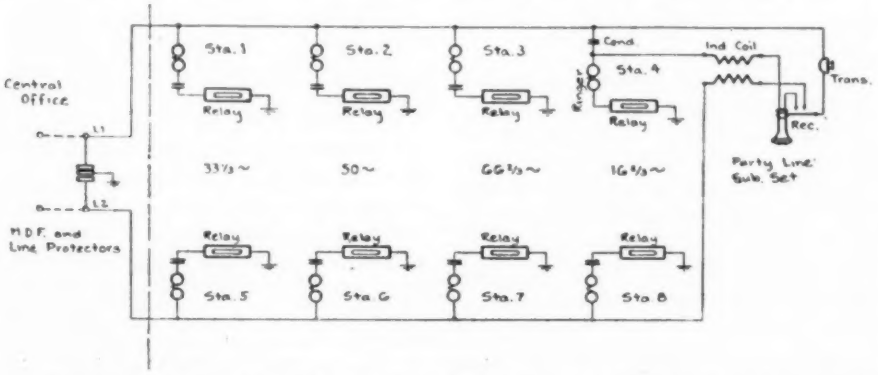
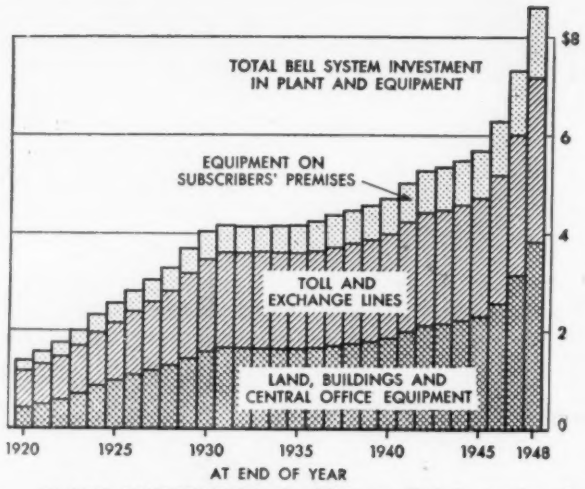
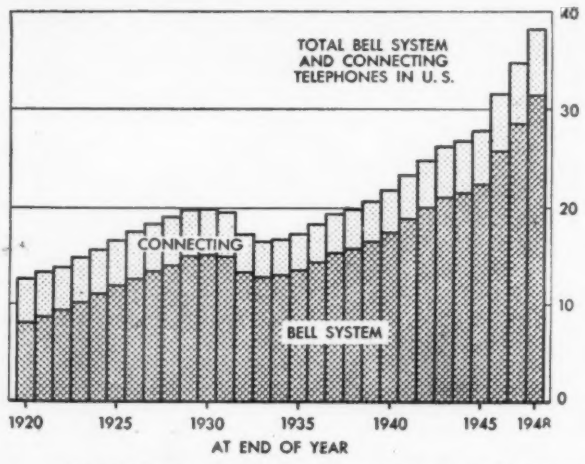


Fig. 4—Typical eight-party selective ringing line showing location of rare-gas relay in bell circuit.



PLANT INVESTMENT—In Billions: Total assets of the Bell System topped the $10 Billion mark at the end of 1948, compared with $8,722,377,290 at end of 1947.



TELEPHONES—In Millions: At end of 1948 nearly 31,400,000 Bell System telephones were in service. Nearly 2,860,000 telephones were added in '48.

AT&T Assets Top $10 Billion Mark;

1948 Construction Sets New Record

TOTAL ASSETS of the Bell System topped the $10 billion mark at the end of 1948. They were $10,000,683,026, the annual report showed, compared with $8,722,377,290 at the end of 1947.

New construction expenditures hit a new high of $1,460 million during 1948, Leroy A. Wilson, president of American Telephone & Telegraph Co., stated.

New capital obtained during the year amounted to $1,027 million, bringing the total since the war to $2,750 million. The proportion of debt in total Bell System capital has increased from about one-third to slightly more than one-half.

"The heavy construction program will continue to require large additional amounts of new capital, and sound financing for the long run requires that the greater part of this new money come from the issue of stock through bond conversions or otherwise," Mr. Wilson stated.

"These facts emphasize the need for earnings that will attract and safeguard additional equity capital." Since late in 1946, Mr. Wilson continued, authorities have granted rate increases amounting to $178 million annually. Applications are pending for more than $260 million a year and further applications will be made.

The Bell System set new records of achievement during 1948. According to Mr. Wilson the quality of telephone service was raised to the best level since prewar years, and new facilities required to further improve the service and to meet demand were installed at the highest rate in history.

New demand for service maintained its record-breaking postwar pace. Approximately 2,860,000 telephones were added and the volume of calls reached a new high of 177,000,000 a day. The gain in telephones since the war now totals 9,5000,000, which is more than the total gain in the 20 years before the war. At then end of 1948 there were nearly 31,400,000 Bell System telephones in service—twice as many as 10 years ago.

There are now approximately 38,200,000 telephones in the United States, of which about 6,800,000 are served by some 6,000 Independently owned telephone companies and 60,000 rural or farmer lines and systems.

Higher Earnings Are Needed

Operating revenues of the Bell System in 1948 were $2,624,827,000. Operating expenses were $2,078,651,000. While revenues in 1948 were 102 per cent greater than in 1941, the last prewar year, operating expenses have gone up 148 per cent in the same period. Net operating income in 1948 was less than 3.5 per cent on telephone plant, compared with 4.75 per cent in 1941. Mr. Wilson stated the current return would be "even lower if the value of the plant were adjusted to today's costs."

Total income available for interest and dividends in 1948 was $319,500,000. Interest charges were $90,336,000, or $27,676,000 more than in 1947, reflecting a further increase in debt obligations to finance the heavy construction required to meet demands for service. The proportion of debt in total capital is now over 50 per cent. Consolidated net income applicable to American Telephone and Telegraph Company stock in 1948 was $222,416,000, or $9.86 per share on the average per share investment of over $134. Net income of the American Company by itself (which includes the Company's interest in subsidiaries only to the extent that such earnings have been received as dividends) amounted to $9.20 per share.

The average rate of earnings of the Bell System since the war on the total capital invested in the business

has been even lower than the subnormal earnings during the war, which were the lowest in the System's history up to that time except for the worst years of the depression in the early 1930's.

Taxes paid by the Bell Companies in 1948 amounted to $292,477,000, and Federal excise taxes paid by customers and remitted by the companies to the United States Treasury came to $406,000,000—a total of about $7,000,000, or nearly $2 a month for every telephone in service.

Mr. Wilson pointed out that telephone excise taxes paid by customers are "more than double the increase in telephone rates since the war." Taxes paid by the companies and Western Electric exceeded the total amount which remained available for interest and dividends.

Applications Pending for Increased Rates

Commenting that wage and other costs have continued to rise, Mr. Wilson stated—"It is important that proper adjustments in prices for telephone service be made effective as promptly as possible. To obtain the additional earnings needed, the Bell Companies since late 1946 have applied for increases in telephone rates in practically all states. Regulatory authorities generally have recognized the need and increases amounting to $178,000,000 annually have already been authorized or made effective. Applications for increases amounting to more than $260,000,000 annually are now pending and further requests will be made.

"Rates for telephone service are still low. The continuing high demand for service is outstanding evidence of its increasing value in the new postwar economy. The increases pending, plus those already granted, average only about 18 per cent of revenues. The rates have increased far less than the cost of living, and far less than the rise in telephone wages and other costs of providing telephone service. Also, the total amount of increases granted and pending is less than the current savings to telephone users resulting from telephone rate reductions in the last 20 years."

Quality of Service Markedly Improved

Reporting that service quality in most respects is back to, or approaching, the high levels which prevailed before the war Mr. Wilson said, "Both local and long distance calls are being handled more promptly and more accurately. The average time for making out-of-town connections has been cut to 1.8 minutes, and 92 per cent of these calls are put through while the calling person remains at the telephone. Service is fast, convenient and courteous. The rate of equipment troubles reported by customers has decreased 15 per cent from a year ago and 95 per cent of out-of-service conditions reported during the business day are cleared the same day."

More than 80 per cent of all new applications for service during the year were taken care of, but so great was the demand that 1,150,000 people were still waiting for telephones at the year's end. In addition, some 2,500,000 party line customers have requested individual lines or other higher classes of service.

About 700,000 manual telephones were converted to automatic operation. Much needed additions were also made to toll and long distance plant. The coaxial cable network, which can carry television programs as well as telephone conversations, was increased by 1,900 miles to a total of 6,500 miles. An important step toward faster and more accurate handling of long distance calls was made in December, when new operator toll dialing networks centering at New York and Chicago were placed in service. Facilities of this kind now enable operators to dial calls straight through to distant telephones in some 300 cities, without the assistance of other operators along the route or in the distant place. Additional facilities of this type are being installed.

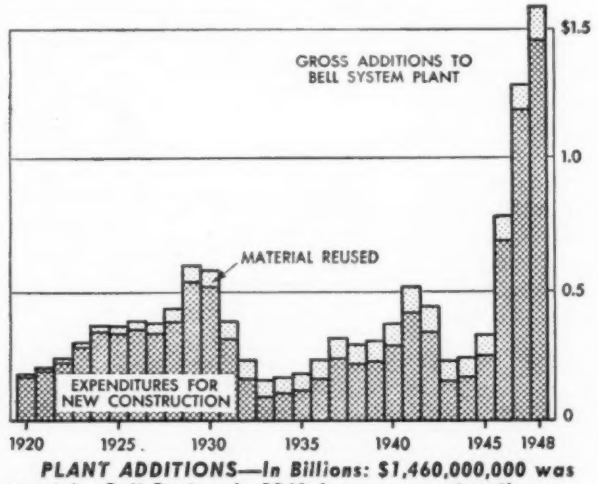
Marked progress was also made in the installation of equipment which enables the customer to dial calls to nearby cities, in the same manner as he dials local calls. A new type of equipment, developed by Bell Telephone Laboratories, employs an electrical "brain" to receive the dialed number and complete the call, while an automatic message accounting system gathers the information necessary for billing. If trouble is encountered, the "brain" makes a second attempt but at the same time makes out a punch-card report giving the location of the trouble.

About 580,000 overseas calls were completed in 1948. This exceeds any previous year and is about 10 times the number before the war. Service was established for the first time to Okinawa, the Belgian Congo and the Sudan. More than 80 countries are now reached and any Bell telephone can be connected with practically all other telephones throughout the world.

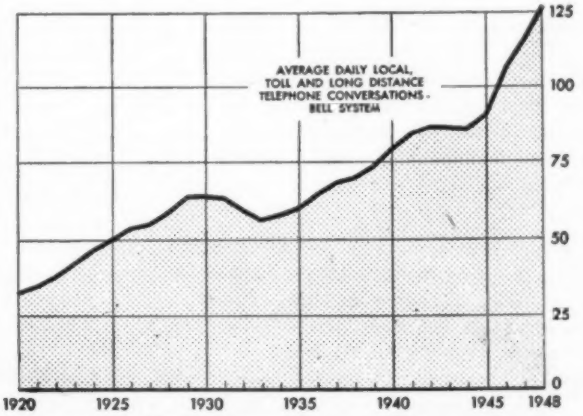
Financing Continued At High Level

With expenditures for new con-

(*Please turn to page 60*)



PLANT ADDITIONS—In Billions: $1,460,000,000 was spent by Bell System in 1948 for new construction.



DAILY CONVERSATIONS—In Millions: Average time for making out of town connections has been cut to 1.8 minutes.

Current COURT and COMMISSION Activities

Rate Increase Approved For Morrison Telephone Co.

The Illinois Commerce Commission has authorized the Morrison (Ill.) Telephone Company to increase its rates about 20 per cent. The new schedule follows:

One-party business, $3.75; two-party business, $3.25; four-party business, $2.75; one-party residence, $2.65; two-party residence, $2.40; four-party residence, $2.15; rural multi-party residence, $2.65; city extensions, 65 cents; rural extensions, 75 cents.

The existing rate of 15 cents per month for hand and desk sets has not been changed. Both Fulton and Morrison are affected by the above increases.

In most cases the boost is 65 cents a month for residence telephone service and 75 cents a month for business service.

Pacific Bell Gets $13 Million Interim Rate Increase

The California Public Utilities Commission has ordered Pacific Telephone & Telegraph Co. to cease payment of 1% of its gross revenues to American Telephone & Telegraph Co. for services to Pacific. At the same time, the commission granted the company an interim $13 million annual rate increase on intrastate tolls in California.

In lieu of the 1% payment, Pacific Telephone was ordered to hold such payments for services to a maximum of $2,250,000 a year, which was adjudged by the commission as the proper amount of payment at this time.

The decision indicates the amount payable last year to A. T. & T. "applicable to California intrastate operations, after adjustment for the effect of three interim rate increases, was $3,344,000." It said that after the issuance by the California commission last August of its order to show cause, "the American company reduced the license fee from 1½% of the respondent's (Pacific Telephone) gross revenues, with minor exclusions, to 1% of a slightly higher revenue base, effective as of October 1, 1948, until further notice."

The $13 million rate increase, granted pending final determination as to proper rates, will augment the company's estimated intrastate revenues by 5.1%, the commission said. The boost will bring the rate of return on Pacific Telephone's California plant investment to not in excess of 5.6%, which the Commission has held to be a proper return.

The effective date of the rate increases is March 21, 1949. They are made conditional upon the company's compliance with the commission's order to reduce payments to the parent company for services.

Pacific Telephone has on file with the California commission requests for rate increases totaling $33,655,000.

Louisiana Commission Fines Exchange Owner

Norris Banker, owner of the Gonzales (La.) Telephone Exchange, has been fined $200 by the Louisiana Public Service Commission on a contempt count, P. A. Frye, commission director has announced.

The charge was brought against Mr. Banker by the commission because of his alleged failure to comply with an earlier order of the commission to improve telephone service.

Mebane, N. C. Rate Increase Approved

The North Carolina Utilities Commission has approved application of the Mebane Home Telephone Co. for an increase in rates.

In support of the application company witness testified that the telephone system was converted from magneto to automatic dial in 1937; that operating costs have increased considerably since 1922; that the quality of the service furnished by the company is fair considering the problem of procuring sufficient materials and equipment; that the company has not paid a dividend since 1922; and that the proposed rates would produce between $3,000 and $4,000 additional gross revenue per annum.

The commission fixed the following rates which it is estimated will produce approximately $2100.00 additional gross revenue per annum.

	1-Party	2-Party	4 & 5-Party	Multi-Party
Business	$4.50	$3.75	$3.00	$2.00
Residence	3.50	2.75	2.00	2.00

Rate Increase Approved For Richmond, Minn.

The Richmond (Minn.) Telephone Co. has received authority to change its schedule of rates and charges at Richmond.

The class of service for which the company proposed rate revisions, with present, proposed, and prescribed rates, are as follows.

Class of Service I	Present Gross Rates II	Proposed Gross Rates III	Approved Gross Rates IV
Individual Line Business	$2.25†	$3.00†	$2.50†
Two-party Line Business	*2.25†	3.00†	2.25†
Individual Line Residence	1.75†	2.50†	2.00†
Two-party Line Residence	*1.75†	2.25†	1.75†
Four-party Line Residence	*1.75†	2.00†	1.50†
Rural Multi-party Metallic, Residence	1.50†	2.00†	1.50†
Rural Multi-party Metallic, Business	—	2.50†	—
Additional Charge, Handsets	.25‡	—	.35‡
Extension Bell	—	.25‡	.25‡
Extension Gong	—	.50‡	.25‡

†All local rates are to be billed monthly in advance and a discount of 25 cents is to be

allowed on local gross rates if paid on or before the 15th of the month in which service is rendered. All rural rates are to be billed quarterly in advance and a discount of 25 cents per month will be allowed on rural gross rates if paid quarterly in advance before the end of the first month of the quarter in which service is rendered.

‡Net.

*Not authorized.

The commission ruled that no finding of value will be found until the plant is put in condition to render adequate service, and that the company shall refund 25c per month to the two-party business, two-party residence, and four-party residence users for the period they have paid the unauthorized rates. The commission stated the company has been charging discriminatory and unauthorized rates for various services and ruled that it should be required to refund all amounts collected in excess of authorized rates.

Norwich, Iowa Exchange Discontinues Service

Faced with too small a group of subscribers to make the exchange pay, Farmers Mutual Telephone Co., Norwich, Iowa, has voted to discontinue its switch board.

The company had been operated for about 40 years, according to estimate of Mrs. J. H. Cutter, Norwich operator since March 1943. Two lines have asked to be released from the Norwich service. One of the Yorktown lines withdrew and a sub-line withdrew to join the Essex exchange.

Rate Increase Approved For Indiana Midland Co.

The Indiana Midland Telephone Corp., Roachdale, Ind., has received authority to charge the following rates at all of its exchanges.

Type of Service	Monthly Rate
Private business	$3.50
Party business	3.00
Private residence	2.50
Party	2.00
Switching	1.00
Desk Set or Handset	.25
Business extension	1.25
Residence extension	1.00
Private line milage per quarter mile or any portion thereof	.50
Bells	.50
Buzzers	.50
Gongs	1.00
Howlers	1.25
Extra directory listing for both business and residence	.50

The Indiana commission ordered that: (1) the company shall make no toll charge for calls between its exchanges at Bainbridge, Ind., and Roachdale, Ind. and that all such calls be limited to five minutes each; (2) the company shall within 18 months complete the recommendations for improving its properties and services as outlined by the commission; and (3) the Indiana Midland corporation will file with the engineering department of the commission a progress report every 90 days covering progress being made in carrying out the improvements.

Winsted, Minn. Increase Results In 5.8% Return

The Winsted (Minn.) Telephone Co., operating a telephone exchange in Winsted, serving approximately 86 local and 106 rural stations has receive authority to increase rates in accordance with the following schedule:

Class of Service	Present Gross Rates	Approved Gross Rates
*Individual Line Business, Common Battery	$3.25†	$4.25†
*Two-party Line Business, Common Battery	—	3.75†
*Individual Line Residence, Common Battery	2.25†	3.00†
*Four-party Line Residence, Common Battery	—	2.50†
*Extension Stations, Business, Common Battery	1.00‡	1.00‡
*Extension Stations, Residence, Common Battery	.50‡	.75‡
Individual Line Business, Magneto	2.75†	3.75†
Two-party Line Business, Magneto	—	3.25†

COMMERCIAL TRAINING | Pays Off

IT HAS BEEN said "some people are born great, some achieve greatness, and some have greatness thrust upon them". The same logic might apply to those who are called on to deal personally with the public. Some people are born with the knack of knowing how to work with others, some acquire this skill by long practice and the trial and error method, while others, must have the "know how" thrust upon them.

One group of telephone companies, in order to maintain a high standard of service to telephone customers, found it desirable to conduct a training course for those commercial employees whose jobs required direct contact with the public. The training program included such subjects as employees' speech, habits of courtesy, ability to understand customers and their reactions, the skillful handling of difficult situations, as for example the classic situation in which a lady business woman's directory ad read something like "I stand ready to service customers" instead of "I stand ready to be of service, etc."

The essential elements on which the training program referred to are based on:

Speech. The correct and pleasing use of the voice. A good telephone personality requires clear, distinct and well modulated speech with the thoughts reasonably well expressed in simple straight-forward language.

Courtesy. Politeness, courtesy and generally accepted requirements of good manners and business etiquette, are vital. These must appear natural and spontaneous to be pleasing.

Understanding. The importance of having the customer feel that it is easy to get the Company to listen to and properly understand requests and complaints is an essential item of the instructions. Commercial representatives must learn to be good listeners and allow the customers to tell their stories in their own way without prematurely or unnecessarily questioning them before the basic facts are obtained.

Explanations. The important part explanations play where necessary to assure the customer that the Company's action or proposals are reasonable is emphasized. Explanations should be such as to insure the customer understands the arrangements made.

Service attitude. Contacts should be so handled as to impress on the customer the Company's chief desire is to be helpful. The customer must be made to feel a real and genuine interest is taken in serving him. Alertness, cheerfulness, naturalness and sincerity are important factors in this connection.

Basic training for new service representatives and "continuation or refresher training" for old employees is accomplished by supervised actual customer contacts and by classroom work.

Individual Line Residence, Magneto	2.00†	2.50†
Four-party Line Residence, Magneto	—	2.00†
Rural Stations Owned, Metallic, Residence	2.00§	2.50§
Rural Stations Owned, Metallic, Business	—	3.00§
Extension Stations Business, Magneto	.50‡	1.00‡
Extension Stations Residence, Magneto	.25‡	.75‡

*Optional.

†All local rates billed monthly in advance and a discount of 25 cents per month will be allowed on all local gross rates if paid on or before the 10th day of the month in which service is rendered.

‡Net.

§All rural rates billed quarterly in advance and a discount of 75 cents will be allowed on all gross rates if paid on or before the 25th of the first month of the quarter, 50 cents if paid on or before the 25th day of the second month of the quarter, and 25 cents if paid on or before the 25th day of the third month of the quarter in which service is rendered.

The following income statement shows in column II operating revenues, operating expenses, taxes, and net income under present rates; in column III is an estimate of the operating revenues, operating expenses, taxes, and net income under proposed rates:

I	II	III
Operating Revenues	$9,063	$11,010
Operating Expenses		
Maintenance	$2,073	$ 2,073
Traffic	2,391	3,253
General	1,955	2,255
Depreciation	1,140	1,140
Taxes	529	795
Uncollectibles	45	56
Total Expenses	$8,133	$ 9,572
Net Income	$ 930	$ 1,438
Rate Base Value		$24,681
Ratio Net Income to Above		5.8%

Lerdal, Minn. Increase Approved By Commission

The Lerdal (Minn.) Telephone Co., operating an exchange in Lerdal, serving approximately 407 rural stations, has received authority to increase rates. Present and approved rates are:

Class of Service	Manual Service Present	Manual Service Approved	Approved Under Dial Service
Individual Line Business	—	—	$3.25§
Two-party Line Business	—	—	2.75§
Four-party Line Business	$2.25†		—
Individual Line Residence	—	—	2.50§
Four-party Line Residence	—	—	2.00§
Multi-party Line Residence	1.50†	—	—
Rural Multi-party Line Residence, Grounded	1.50†	—	—
Rural Multi-party Line Residence, Metallic	1.50†	$2.00§	2.25§
Rural Multi-party Line Business, Metallic	—	2.50§	2.75§
Extension Stations, Business	.62½‡	1.00‡	1.00‡
Extension Station, Residence	.62½‡	.75‡	.75‡
Extension Gong	—	.50‡	.50‡
Extension Bell	—	.25‡	.25‡
Village School or Church	—	2.00§	2.50§
Rural School or Church	—	2.00§	2.25§

Approved: In addition to the above rates an excess mileage charge of 50 cents per quarter mile or fraction thereof for Individual Line service outside of the local base rate area. This rate to be effective upon conversion to Dial service.

†All rates are to be billed quarterly in advance and a discount of 25 cents to be allowed on all gross rates if paid on or before the 15th of the first month of the quarter.

‡Net.

§All rates are to be billed quarterly in advance and a discount to be allowed on all gross rates of 75 cents if paid on or before the 15th of the first month of the quarter in which service is rendered; 50 cents if paid on or before the 15th day of the second month of the quarter; and 25 cents if paid on or before the 15th day of the third month of the quarter in which service is rendered.

The commission found the fair value of the Lerdal company's property used and useful in rendering manual telephone service is $43,643, and that when dial service is installed at Lerdal and Clarks Grove the fair value of the property will be approximately $57,483.

The following income statement shows in column II operating revenues, operating expenses, taxes, and net income under present rates; in column III is an estimate of the operating revenues, operating expenses, taxes and net income under proprosed rates and manual operation; in column IV is an estimate of the above items under dial operation:

I	II	III	IV
Operating Revenues	$8,302	$10,729	$11,776
Operating Expenses			
Maintenance	$2,179	$ 2,179	$ 2,780
Traffic	2,393	2,393	703
General	981	981	1,031
Depreciation	2,093	2,093	2,784
Taxes	436	1,075	1,440
Uncollectibles	42	54	59
Total Expenses	$8,124	$ 8,775	$ 8,797
N t Income	$ 178	$ 1,954	$ 2,979
Rate Base Value		$43,643	$57,482
Ratio Net Income to Above	4.48%		5.18%

Rates and charges for manual service became effective upon the first billing date following February 28, 1949. Rates and charges for dial service will become effective upon certification to the commission by a qualified officer of the company that dial service has been established at Lerdal and Clarks Grove.

"Hello operator—who keeps calling my number?"

Zumbro Falls, Minn. Exchange Sold To C. E. Hasselgrave

The Minnesota Railroad & Warehouse Commission has approved the proposed sale of the Zumbro Falls (Minn.) Farmers Telephone Exchange Co. to Calvin E. Hasselgrave, individual purchaser.

TELEPHONE
Expansions - Improvements

As a result of a questionaire forwarded to Independent telephone companies with TELEPHONE ENGINEER NEWSLETTER of February 11, 1949, 139 companies representing 80,039 telephones, reported Spring Construction Expenditures totaling $3,077,791, allocated as follows: Outside Plant Expansion, $722,190; Outside Plant Rebuilding, $631,355; New Central Office Equipment, $1,705,546, and Rebuilding Central Office Equip., $18,700.

The average Spring Construction expenditure per company reporting equalled $22,142. Average Spring Construction expenditure per station of Companies reporting was $37.20. Among the projects reported were the following:

ALABAMA

Ashford:—C. B. Dupree, owner of the Dupree Telephone Co., reports spring construction expenditures will total $5,750. Mr. Dupree states $1,750 will be spent for rebuilding outside plant and $4,000 for new central office equipment.

CALIFORNIA

Bishop:—Interstate Telegraph Co. reports its 1949 construction budget totals $1,064,850. A breakdown of the total budget reveals that Interstate has scheduled $37,500 for toll rebuilds, $192,500 for toll additions, $37,350 for exchange additions, $166,000 for small revenue extensions, $461,500 for large revenue extensions, $165,000 for miscellaneous projects, and $5,000 for contingencies.

Farmington:—Howard J. Tower, manager of the Calavera Telephone Co., advises company plans to convert from magneto to automatic equipment. The company also has estimated spring construction expenses at $8,000.

Patterson:—J. H. Evans, owner of the Evans Telephone Co., reports spring construction activities will require expenditure of $7,000; outside plant expansion, $4,500; rebuilding outside plant $1,500 and new central office equipment $1,000.

GEORGIA

Ellijay:—The Ellijay Telephone Co. is planning to extend its exchange lines to the adjoining city of East Ellijay to serve 25 to 50 new subscribers. The company also plans extension of its lines on main highways out of the city.

S. B. Green, president, stated that eventual conversion to common battery operation is contemplated. Since his purchase of the Ellijay company in 1946, a continual program of improvement and expansion has been carried on. This activity has resulted in an approximate doubling of stations in service.

White Plains:—J. H. Darby, owner of the White Plains-Union Point Tel. Co., has announced a $4,245 construction program. Mr. Darby states the entire plant will be given "a general rebuilding." He estimated expenses would be divided as follows; outside plant rebuilding, $4,000, and new central office equipment (main frame) $245.

ILLINOIS

Altamont:—Spring construction activities of the National Trail Telephone Co. will require expenditures of $31,000. Earl F. Stice, general manager, reports cost of outside plant expansion will be $5,000, rebuilding outside plant $20,000, and new central office equipment $6,000.

Dorsey:—Martin J. Aljets, president of the Dorsey Telephone Co., reports that spring construction projects will require; 1100 lbs. of drop wire; 9500 lbs. of line wire; 200 anchors; 700 poles; pole line hardware to rebuild 20 miles of line; 85 new telephones; protective equipment for 100 lines and one automatic switchboard.

Liberty:—Albert Flick, treasurer of the Farmers' Telephone Exchange, has advised that present estimates of spring construction expenditures total $1550. Mr. Flick states that the various plant expansion and rebuilding projects will require the expenditure of $600 for poles and $500 for pole line hardware and crossarms.

Millstadt:—Spring construction expenditures of the Millstadt Telephone Co. will amount to $13,950, with $4,200 allocated to rebuilding outside plant and $9,750 for new central office equipment. Oscar H. Krick, manager, states that all material including an automatic switchboard has been purchased.

Morrison:—F. S. Haines of the Morrison Telephone Co. has estimated spring construction expenditures of the Morrison company at approximately $25,000. Mr. Haines advises that approximately $6000 has been scheduled for outside plant expansion, $11,000 for rebuilding outside plant, and $8,000 for rebuilding central office equipment.

Woodlawn:—D. A. Stephenson, manager of the Woodlawn Telephone Co. advises that the company expects to convert to automatic operation this spring. The project represents an investment of over $7,500.

INDIANA

Birdseye:—Thomas C. Stempley, president of the Patoka Telephone Co., advises the company is rebuilding 25 to 30 miles of line and installing a new magneto switchboard.

Warren:—R. E. Laymen, manager of the Citizens Telephone Corp., reports spring construction expenditures will total $4,000 with $1,000 scheduled for outside plant rebuilding and $3,000 for outside plant expansion.

IOWA

Emerson:—W. C. Short, manager of the Emerson Mutual Telephone Co., has announced plans to metallicize the company's lines. The company is also considering installation of a 250-line switchboard.

Farson:—H. A. Henry, manager of the Farson Telephone Co., advises his company plans to "make all lines metallic just as fast as income will permit."

Hudson:—Spring construction expenditures for the Hudson Mutual Telephone Co. have been estimated at $6,000. Secretary P. W. Degener reports the Hudson company recently completed installation of a new common battery switchboard and an extensive cable installation project.

Mr. Degener advises that the Hudson company recently purchased the Voorhies, Iowa exchange from the Central Iowa Telephone Co. The Voorhies exchange serves 137 subscribers and has 40 miles of pole line. The Hudson company is building a line into Hudson to merge the exchanges into one coordinated system. Mr. Degener states

the Hudson company will take possession May 11, 1949 and expects to have the exchange coordination program complete at that time.

Jesup:—H. J. Hopkins, general manager of the Farmers Mutual Telephone Co., has reported the company expects to convert to automatic service during the summer of 1949 at an estimated cost of $46.500. Mr. Hopkins estimates a $3,000 expenditure for expansion and improvement of outside plant facilities.

Mt. Auburn:—Fred A. Burr, manager of the Mt. Auburn Co-op Telephone Association, reports the company has scheduled a $3800 spring construction program.

Rockwell:—Expenditures totalling approximately $2,500 have been scheduled by the Rockwell Co-op Telephone Association. G. B. McGoneron, manager, reports the amout will be used for outside plant rebuilding projects.

Shellsburg:—The Farmers' Mutual Telephone Co. reports planned spring construction activities will require expenditures of $4,000. The company is in process of acquiring farmer-owned lines and metallicizing the lines.

Wever:—Lloyd Pearsall, owner of the Wever Telephone Co., advises that the company plans to metallicize all rural lines during 1949. The company has estimated expenditures of $1,400 for spring construction projects.

KANSAS

Brazilton:—L. Ilgerstrom, manager of the Brazilton Telephone Co., reports the company expects to install a new common battery switchboard.

Gardner:—Eugene Gault, manager of the Johnson County Telephone Co., advises the Johnson County company will have expenditures of $30,000 during the spring months. The company will convert from magneto to common battery operation.

Woodston:—According to Kenneth L. Orr, the Woodston Mutual Telephone Co. will have expenditures of $1,150 on construction activities scheduled for this spring. $1,000 is scheduled for outside plant rebuilding; $150.00 for new central office equipment. The company also plans to metallicize some of its rural lines.

MASSACHUSETTS

Holyoke:—Granby Telephone & Telegraph Co. reports a spring construction budget of $7,500. Manager R. E. Bacon reports outside plant expansion projects will cost $5,500 and $2,000 will be expended for outside plant rebuilding.

MAINE

Damariscotta:—Spring construction activities of the Nash Telephone Co. will result in expenditures of $12,500. The company states the expenditures will be divided as follows; plant expansion, $2,000; plant rebuilding, $1,000; new central office equipment, $8,000 and rebuilding central office equipment, $1,500.

Levant:—John M. Hill, manager of the Levant Telephone Co. anticipates expenditures of $2,600 for spring construction projects. $1,000 of this amount is scheduled for outside plant expansion; $1,000 for rebuilding outside plant; $500 for new central office equipment and $100 for rebuilding central office equipment. Mr. Hill purchased the Levant company in October, 1948 and is completely rebuilding the plant.

Mattawamkeag:—The Winn Telephone Co. reports plans to build approximately 70 miles of new lines and rebuild approximately 12 miles of lines.

MICHIGAN

Climax:—John W. Collver, manager of the Climax Citizens Telephone Co. has estimated $1500 expenditures for rebuilding outside plant during the spring months.

New Lothrop:—The Shiawassee-Genesee Telephone Co., advises that projects scheduled for completion during the spring of 1949 will require expenditures of $5,140 exclusive of labor. Outside plant expansion expenditure will amount to $1,140; outside plant rebuilding $2,500, and new central office equipment $1,500.

Does More Business | Mean More Profits

TONY RUNS a peanut stand on a Chicago street corner. Over many years he has built up a steady and profitable trade. People like Tony and they buy his peanuts.

Recently Tony considered expanding his business by opening up a second stand at another location. In looking into the matter, however, Tony discovered that a new stand would be very expensive—twice as much as the old stand cost, and he would have to borrow this money. Tony figured it out. By the time he had paid someone else to run the stand for him and had paid the carrying charges on the loan used to buy the new stand, he would be in the hole. Even by raising the price of peanuts by 5 cents a bag his own chances for making money were very slim. So Tony gave up the idea for the time being and continued to operate his profitable peanut stand at the original location.

The Telephone Company has faced almost the same problem that Tony faced in this little story. Hundreds of thousands more people wanted telephones installed. That meant more business. But, the Telephone Company—like Tony—discovered that more business does not always mean making more money. Here's why:

First, of course, each new telephone means increased operating and maintenance costs. Each new telephone today costs more than $300 for equipment and installation. A few years ago a telephone could be added for around $200. In other words, our buildings, equipment, cable, etc. are all higher priced now—just as other things are. Also, we're subject to another basic problem that Tony didn't have: as more and more telephones are installed, a great deal more equipment must be provided to make it possible to inter-connect every telephone with any other telephone. As the telephone system grows, more equipment to provide for complete intercommunication between all telephones grows more complicated and more expensive. Adding thousands of new telephones since the war has cost millions and millions of dollars. This has been paid for by telephone investors.

Just as Tony would have had money borrowed from someone else tied up in the new peanut stand, the Telephone Company does have the savings of many investors tied up in new telephone equipment—and there is little to show for it. The earnings of the business have to be spread over a great deal more investment. Obviously, this means that the amount available for each dollar of investment is much less.

It was possible for Tony to decide against expanding his business when he found that it would not be profitable. The Telephone Company, however, has an obligation to provide service to the public; and it has gone ahead installing telephones as rapidly as possible even though more business did not mean that it made more money.—BELL TELEPHONE NEWS.

Waldron:—J. R. Fox, manager of the Waldron Telephone Co., advises that spring construction expenditures will total $5,300. Mr. Fox states that $1,500 has been allocated for outside plant expansion, $3,300 for rebuilding outside plant and $500 for rebuilding central office equipment. The company is in process of installing new line wire. About 20% of the project is completed.

MINNESOTA

Deer River:—K. E. Giles, owner of the Deer River Telephone Exchange, estimates expenditures of $2,000 on various spring construction projects.

Dunnell:—Heavy sleet storms caused extensive damage to drop wire plant of Dunnell Telephone Co. C. L. Rupe, owner said that about one half of the drop wires will be replaced.

Grand Meadows:—V. Martinsen, manager of the Home Telephone Co. advises that spring construction expenditures will require $3,000 for expanding and rebuilding outside plant.

Kasson:—H. H. Tollefson, manager of the Kasson & Mantorville Telephone Co., reports that $1,500 will be expended on outside plant rebuilding projects during the spring months of 1949.

Middle River:—Emil Peterson, manager of the Middle River Telephone Co., reports the company is contemplating installation of an automatic system if financing plans are successful. Expenditures of $1,300 are scheduled for spring construction projects.

Minnesota Lake:—Minnesota Lake Telephone Co. reports spring construction expenditures will total $4,250, with $2,000 scheduled for outside plant expansion, $1,500 for rebuilding outside plant, $500 for new central office equipment and $250 for rebuilding central office equipment.

Spring Grove:—A. B. Halverson, president of the Spring Grove Co-op Telephone Exchange, is considering installing new common battery switchboard. The Spring Grove company provides switching service to subscribers in vicinity of Spring Grove.

Steen:—Roy H. Ankes, secretary of the Steen Rural Telephone Co., has estimated 1949 spring construction expenditures at $500 with the largest expenditure, $300 scheduled for outside plant rebuilding.

Twig:—The Alborn Telephone Co. plans a $1,600 construction expenditure for this spring. $1,000 is scheduled for outside plant rebuilding, $500 for expansion of outside plant and $100 for rebuilding central office equipment.

Two Harbors:—Bunel H. Bailey, superintendent of Telephone & Telegraph, Duluth, Missabe and Iron Range Railway Co., has announced a $75,120 expansion-improvement program. Mr. Bailey states $42,000 will be expended for outside plant expansion, $22,000 for rebuilding outside plant, $8,870 for new central office equipment and $2,250 for rebuilding central office equipment.

The railway company will install additional switchboard positions at Tower, Minn., and Two Harbors. Also scheduled are; installation of teletype circuit from Duluth to Hibbing and providing 10 locomotives with radio facilities and one fixed station on 158.61 mc band.

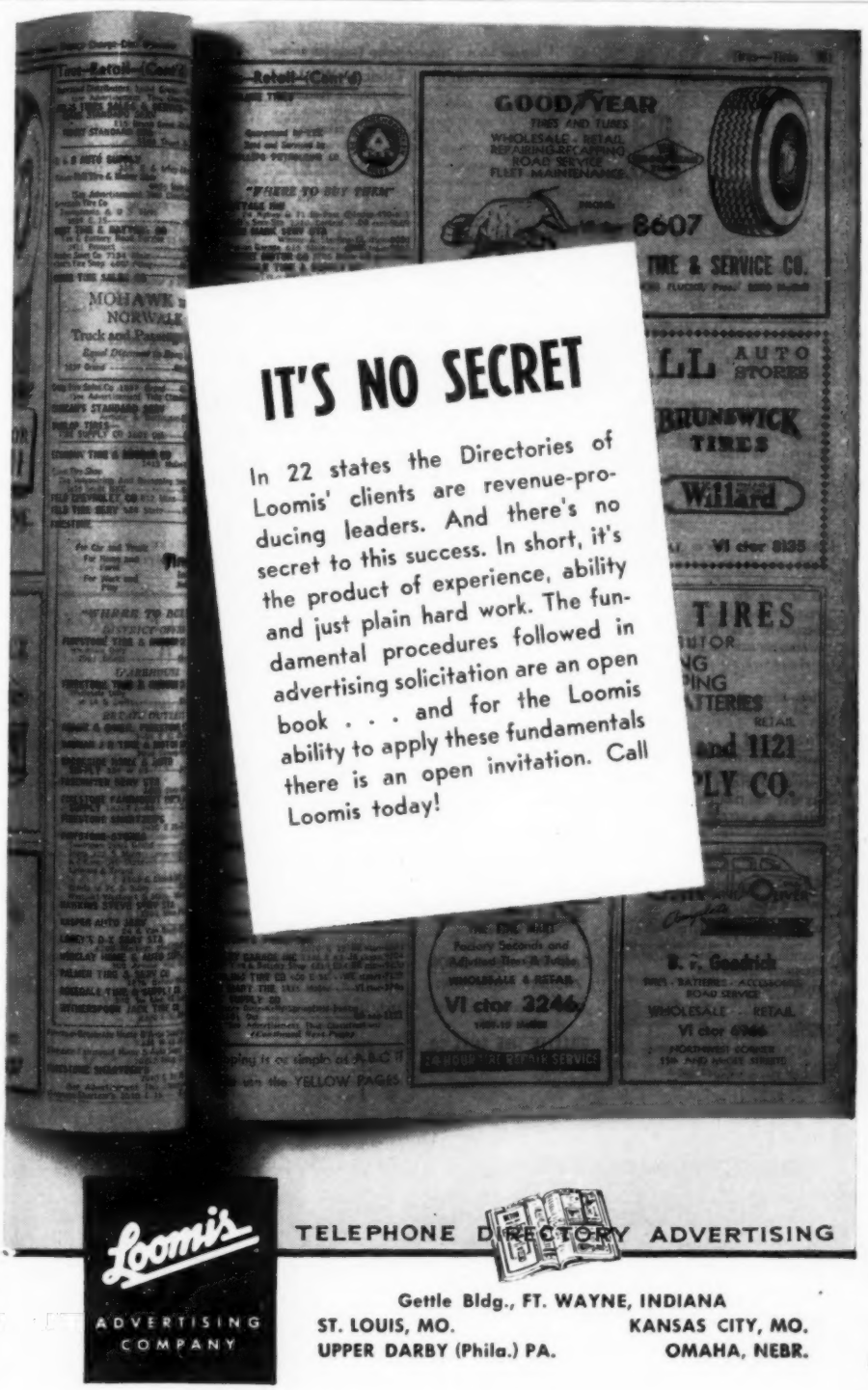
MISSISSIPPI

Hazelhurst:—W. H. McCardle, manager of the McCardle Telephone Co., reports that spring construction activities at the Georgetown, Miss., exchange will cost $2,600.

MISSOURI

Branson:—Malcolm Sherwood, manager of the Branson Telephone Co., reports estimated expenditures of $20,000 for spring construction projects. Mr. Sherwood stated outside plant expansion will cost $5,000, outside plant rebuilding $7,000, and new central office equipment $5,000.

(Please turn to page 68)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OMAHA, NEBR.

QUESTIONS and ANSWERS

EDITED BY

JAY G. MITCHELL

Q. I am writing you concerning information on setting poles in water and sloughs. We are fairly new in the telephone business and are not very familiar with the best methods of building in sloughs. We do all our digging by hand with shovels. Please send me all the information you have for this type of construction. We read your section in the TELEPHONE ENGINEER all the time and find it very interesting and helpful.

A. This inquiry comes from a telephone company operating its system in the far northern part of the United States. This is mentioned because it is reasonable to suppose that there will be a substantial change in the character of the footing of their poles, set in soft soil in the summer, when winter comes. It is advisable to consider this fact in laying out pole lines traversing sloughs, swamps or the beds of streams and to adopt the method which will afford the most secure result for the **greater portion** of the year.

The route of the proposed pole line should be laid out as to avoid the necessity of setting poles in soft or swampy soil as much as possible. This is because pole lines in such soil must be most carefully guyed and ordinarily should be set somewhat deeper than the same poles would be set in solid soil that can afterward be satisfactorily tamped in place. It is our suggestion that you discuss your problem with the construction heads of some of the large neighboring companies because it is completely outside the possible scope of this column to fully cover the subject.

When setting poles in soft ground that slides back into the hole as it is removed the use of a barrel with the heads removed is sometimes helpful. The barrel is forced down into the hole as the soil is removed until it reaches more solid soil. The pole is then set in the barrel and the hole filled without removing the barrel. In such cases it will be wise to place an anchor plank under the corner poles or unguyed poles or guyed poles that carry heavy loads of wire. In some cases the barrel may be filled with loose rock and the replaced soil and the combination firmly tamped into place. Pole lines in this sort of setting must be firmly guyed.

Poles may be set in the beds of streams which are rocky and in which the water is deep only a part of the time by using cribs. Cribs are rectangular frames constructed log cabin wise by laying timbers up and securely bolting them together at the corners. The crib then is filled with loose rock after the pole has been placed in its approximate center. Obviously the timbers must be built up to a considerable height since they hold the loose rocks in place around the pole and there must be enough rock used to afford a firm support for the pole in the center of the crib. Such poles must also be carefully guyed. Finally it is our suggestion that pole lines in such locations be avoided if possible and if they cannot be relocated in more favorable soil that you consult with your large neighboring company as to tried and approved methods. Do not forget that careful guying is necessary.

Free Help on Problems

IF YOU'D like Jay G. Mitchell's technical and helpful opinion on some question, a postcard will bring you a reply in these columns. Or if you're in a hurry, please send along a stamped self-addressed envelope for immediate reply.

Let TELEPHONE ENGINEER tackle your problems when you do not have the answer. This is a free service. Your question and the resulting answer may not only solve your problem but also help the many other telephone men reading these columns.

Q. Am wanting some information on short haul carrier systems for farmer line use on my telephone system. I have heard some are being made but cannot seem to find out much about them. All the information I receive is for use in connection with the power line, high voltage or long distance carrier units or more a thousand dollars per unit or more. I cannot find any thing adaptable to my need.

I own and operate 240 stations, mostly magneto and the Bell does my switching. About 60 of my subscribers are from 20 to 40 miles distant from the exchange in Paso Robles where the switching is done. In a small town 20 miles out I have about 20 applications for service which cannot be served with the present facilities. At present I have 5 circuits serving this area. Two circuits are metallic iron wire and the other three are formed from 4 number 0.080 hard drawn copper in connection with phantom coils. Am enclosing a sketch showing the set-up.

Can a set or sets of carriers be used in connection with the copper so at least 4 to 8 additional 10 party magneto circuits can be available thus eliminating more wire stringing? If additional wires are strung it will necessitate rebuilding the entire 20 miles the cost of which would be prohibitive now. The present line is all in good condition but is not heavy enough without changing poles and all the cross arms.

If carriers can be worked out would the cost be over $500.00 per unit (or circuit)? What is the best type of energy, battery or direct from the power line 110 volt A.C.? AC is avail-

able from the local power company but service interruptions are not uncommon. How would a storage battery in connection with a charger from the power line work? Could subscribers be served on the copper wires between the termination points where the carriers would be installed? I also have one metallic circuit of number 109 iron, 12 miles long installed the same time the copper was about 3 years ago. Can carriers be worked on that? I realize this is a lot of questions but believe you can give me more direct and reliable information than any one else. I have a friend who operates a telephone company somewhat under the same conditions as I do and has about the same problems.

A. Whether to install carrier equipment, in any case, is a problem in economics. The economics of the matter rest upon the revenue that can be reasonably expected to be produced from the service made possible by carrier measured against the cost of conventional line construction and the cost of carrier equipment. If the probable revenue does not appear to be likely to cover fixed charges, operating costs and a reasonable return on the investment, the installation cannot be justified. Under the same conditions the construction of conventional additional lines is not justified either.

To reach otherwise inaccessible localities, where the cost of construction or the character of the country preclude ordinary construction carrier or radio link equipment might be justified on the basis of providing the only physically possible means of supplying the service when the service **must be provided,** regardless of costs, for safety or protection to timber or water reserves etc.

I have taken the liberty of reading this letter over the telephone to one manufacturer of carrier equipment and it is understood that printed matter and other information will be sent to this correspondent. Short haul carrier can be secured from the following manufacturers.

Communications Equipment and Engineering Company, 5646 Race Avenue, Chicago, Illinois

Stromberg-Carlson Company, Rochester 3, New York

Kellogg Switchboard and Supply Company, 6650 South Cicero Avenue, Chicago 38, Illinois

Automatic Electric Sales Corporation, 1033 West VanBuren Street, Chicago, Illinois

My advice is that you determine the total cost of any proposed carrier installation, compare the cost with the probable revenue and make your decision accordingly.

Automatic Electric

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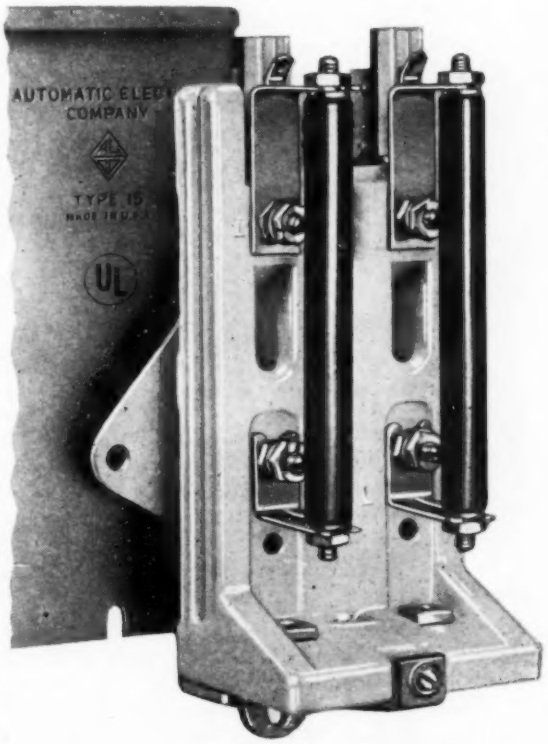
It's easy to understand the increased demand for Automatic Electric Type 15 Substation Protectors. More companies are using Type 15 because it's easier to install, easier to wire, easier to maintain and easier on the supply budget. You can stock less of the Type 15, because it can be used inside without cover, or outside with cover. Finally, the discharge block used with the Type 15 eliminates resetting expense after discharge. Ask for full details about this and other Automatic Electric protective devices.



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(Continued from page 37)

tomers. The Gulf States Utilities 278,479 shares at 16.80 were also quickly sold. On a secondary offering of 25,000 shares of Gulf Oil Corporation at 66.25 the books were closed almost as soon as opened, with orders on hand for four times the number of shares offered.

Most of the telephone offerings in Table One are small and were placed locally, and all were successful except the Inter-Mountain Telephone 95,000 shares offered on a 6% dividend yield basis to its own stockholders; aside from the 42,776 shares taken by its two parents Southern Bell Telephone and Chesapeake & Potomac Telephone of Virginia, only 7,417 shares were taken by other stockholders, leaving an untaken balance of 44,807 shares, the sale of which was undertaken by a group of investment banking houses.

The markets for common stocks today are very different from what they were twenty years ago or even ten years ago. In those days the emphasis was on speculation; buyers in the trading markets or of new issues were mostly persons looking for a capital gain, the opportunity to dispose of their purchase at a later date at a higher price than they had paid. Today there is comparatively little of this kind of buying, most of it is for investment, the buyer intending to hold the shares for the dividend income he expects to receive.

This investment buying process has now continued to the point where the floating supply of many well known common stocks is very small compared with what it used to be. Some readers may find it news, for instance, that in the entire year 1948 only 5% or less of the total outstanding shares of such companies as American Telephone, Borden, Coca Cola, du Pont, Eastman Kodak, General Motors, Liggett & Meyers, Procter & Gamble, and Woolworth changed hands on the New York Stock Exchange; in other words, 95% or more of the common stocks of each of these companies were held at December 31, 1948 by the same people who held them at the beginning of the year. For numerous other companies the number of shares which changed hands was only between 5% and 6%, companies such as Allied Chemical, General Electric, General Foods, Sears Roebuck, Shell Union Oil and others. Most of the common stock capital of most of our leading corporations is now held for investment, thus reducing the number of shares that can still be bought for investment.

Examination of present day portfolios of some of the larger investment funds discloses what has been happening. Harvard University, for example, has an endowment fund which at June 30, 1948 had a total market value of $204 million. Of this total, common stocks accounted for 42.2%, bonds other than U. S. Government 18.5%, preferred stocks 9.3%, real estate and mortgages 1.4%. At the corresponding date in 1929, when common stock prices incidentally were higher than in mid-1948, the corresponding percentages were 25.1%, 47.6%, 5.5% and 12.8%. The shift from bonds into common stocks which the foregoing illustrates has characterized the investment policy of so many fund managers, large and small, that conditions now strongly favor the sale of new common stock of investment quality. And this applies to the grass roots in perhaps even greater degree than it does to the big national centers.—THE END.

USITA Executives' Conference Scheduled For April 11-12

PLANS for the 1949 Executives' Conference of the United States Independent Telephone Association at the Edgewater Beach Hotel in Chicago on April 11-12 are progressing. Subjects and speakers selected for this important gathering of the policy-makers of the Independent companies will soon be announced.

The Program Committee and officers report that this year's conference will reach a new high in interest and value.

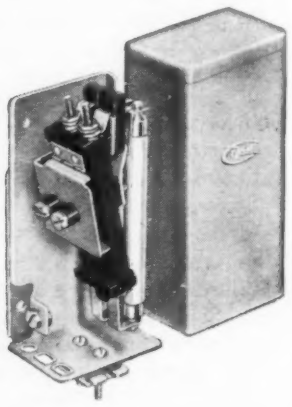
Executives planning to attend should now write hotel requesting accommodations desired.

STROMBE

cook type RO

outdoor sub-station protecti

A very rugged Protector, assem bled on a bracket of heavy steel- instead of porcelain—to take roug handling and subscriber abus without danger of breakage. Oth outstanding features:



1. Uses a Cook Standard Type H Protector unit with molded bakelite base for high resistance to electrical and physical shocks.
2. Protector unit contains both primary and secondary arresters. The secondary arrester provides a path to ground for lightning should the fuses be blown.
3. Mountings contain heavy studs for connecting drop wires and ground.
4. Equipped with heavy zinc weatherproof hood, and bracket for mounting on post, wall, etc.
5. All structural parts, including hood and bracket, are grounded.

STROMBERCA

STROMBERG Telephone CARLSON

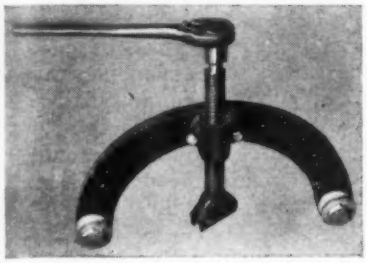
Factory, Branch Kansas Stromber

TELEPHONES, SWITCHBOARDS • SQUIPMENT A

BERG-CARLSON recommends...

ratchet handle slack puller

made by Cable Spinning Equipment Co.



The same dependable Slack Puller, but with a ratchet added. This type of handle enables the operator to pull slack with the Little Giant Slack Puller, requiring even less effort than would be needed with the conventional model.

The correct tool for those who use the Puller day after day.

"dependable" *means both the trade-mark & the guarantee of cross-arms by* American Cross-Arm Inc.

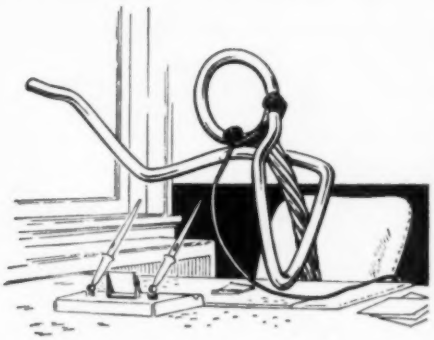
The finest pole and wire installation is useless if cross-arms fail. "Dependable" Cross-Arms are all that the name implies—made of sturdy, American woods, long seasoned, fashioned and finished to stand every weather condition from desert heat to mountain blizzards.

In Douglas Fir—Creosoted Yellow Pine or Gulf-Red Cypress.

Copperweld Line Wire

TRADE MARK

SPEAKS FOR ITSELF:



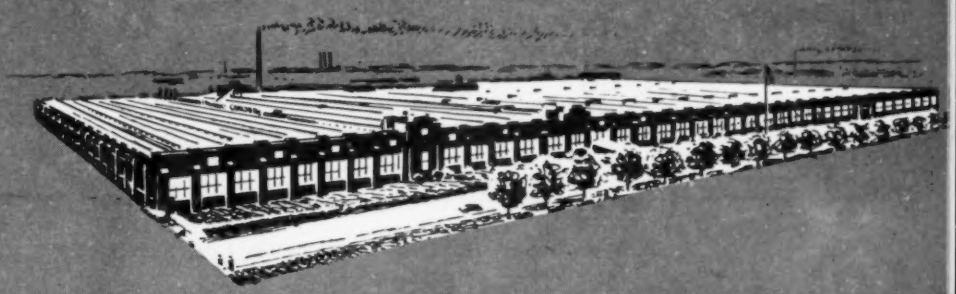
High in conductance—with better voice and high frequency transmission characteristics than any other high-strength conductor . . . **that's Copperweld.**

Permanently protected against rust—2 to 3 times stronger than hard-drawn copper wire—greater tensile strength than any wire having comparable electrical properties . . . **that's Copperweld.**

Light in weight—small in diameter—pliable—and easy to string . . . **that's Copperweld.**

Unsurpassed for economy because it lasts so much longer and requires so little maintenance . . . **that's Copperweld.**

RCARLSON



Factory, General Offices: Rochester 3, N.Y.
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SOUIPMENT AND ELECTRONIC CARILLONS • INDUSTRIAL, INTERCOMMUNICATION SYSTEMS • RADIOS, RADIO-PHONOGRAPHS, FM AND TELEVISION

AT&T Assets Top $10 Billion

(Continued from page 49)

struction at a record high in 1948, the Bell System for the second consecutive year required and obtained more than a billion dollars of new capital. This is about 15 per cent of the total capital outstanding. Eight AT&T subsidiaries sold debt issues totaling $675,000,000, and AT&T Company in December sold $150,000,000 of 25-Year Debentures. All these issues were sold at competitive bidding. Reflecting the increasing cost of borrowing, the annual interest cost to AT&T on the $150,000,000 issue is 3.33 per cent—the highest for any debt issue of the company since 1930.

Of the company's $357,532,600 2¾% Convertible Debentures of 1957, which became convertible March 1, 1948, $180,000,000, or over one-half, have been converted into stock at $140 per share, payable by surrender of one $100 debenture and $40 in cash. About $70,000,000 of the company's $343,087,700 2¾% Convertible Debentures of 1961 have also been converted into stock. To date some $107,000,000 has been received as stock premiums as the result of conversions of these two issues.

More than one-eighth of the total debt of the System at the end of 1948 was convertible into stock of the AT&T Co. Mr. Wilson stated, "The effect of conversion is to reduce debt by the amount of bonds convented and to increase equity capital by a larger amount due to the cash premiums paid in. Equity capital will be further increased and the debt ratio decreased to the extent that additional shares are issued under the Employees' Stock Plan.

During 1948 the company's stockholders increased by 42,400 to a new high of 765,800. Ninety-five per cent of the stockholders are individuals and more than half of them are women. The remaining 5 per cent are trustees, colleges, hospitals, churches and other institutions. At the end of the year, women held 43.0 per cent of the shares and men held 25.8 per cent, while 11.9 per cent were held in joint accounts.

Holders of 1 to 5 shares numbered 210,000 while 720,000 stockholders held less than 100 shares each. The average number of shares held was 30.5 and no stockholder held as much as one-third of 1 per cent of the total stock. More than 270,000 stockholders have owned stock in the company for 15 years or longer. Some 50,000 Bell System employees now own about 775,000 shares of the company's stock.

Rural Development Up 65 Per Cent

Mr. Wilson stated that rural telephone service is more highly developed in this country than anywhere else in the world and its development has been steadily increasing for many years. "Although postwar telephone gain has been phenomenal throughout the nation," he said, "rural telephones have increased even faster and are up 65 per cent since the latter part of 1945. In keeping with the rapid growth of the television industry, the Bell System last year substantially increased the number and extent of its facilities for carrying programs from city to city, and from pickup points to television studios and transmitters.

Some 5,000 circuit miles of special facilities are now in use serving 32 television broadcasting stations in areas where 40,000,000 people live. The network uses both coaxial cable and radio relay facilities, which generally provide for carrying both telephone conversations and television.

Mobile telephone service was provided in 1948 to an increasing number of automobiles, trucks, trains and other vehicles, in more cities and along more highways. At the end of the year there were 6,000 mobile telephones, in 129 areas, which could be connected via radio and wire lines with any other telephone in the nation. Service is now available to passengers on 14 trains running daily between New York and Washington, Boston, Pittsburgh and Buffalo; about 20 railroad companies are now using such service furnished by the Bell System.

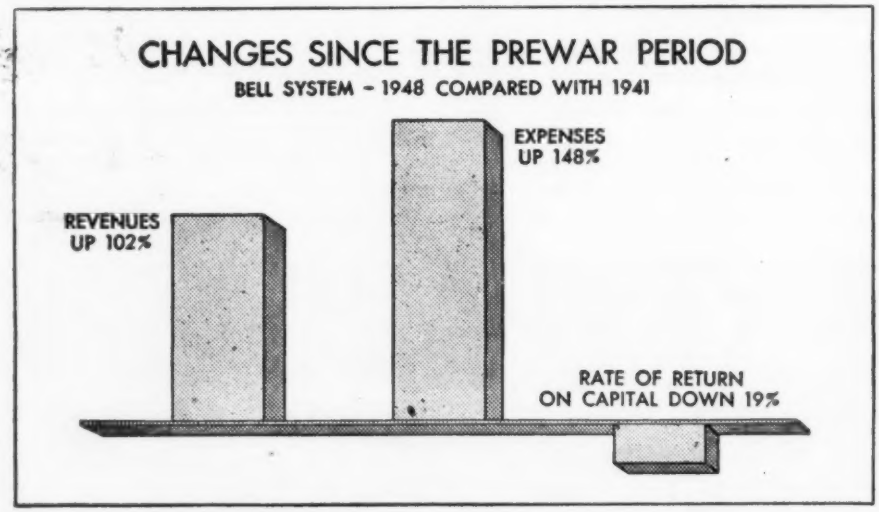
Service to ocean and harbor vessels and on inland waterways also continued to increase. Some 11,000 vessels are now registered for this telephone service which like the mobile service permits them to talk with any telephone in the nation. Also 150 airplanes are registered for the service.

Mr. Wilson stated, "These services have already assumed great importance in many businesses. Demand in a number of places exceeds the capacity of the radio channels allocated, and applications have been made for additional channels. Police, utilities and industrial concerns continue to make increasing use of private mobile telephone systems leased and serviced by the Bell Companies."

Bell System Employees Number 656,500

At the end of 1948 the number of employees in the Bell System was 656,500 as compared with 663,100 in 1947. Of these, 103,800 were employed by Western Electric Company and about 6,000 by Bell Telephone Laboratories.

The 1948 expense pay roll of the Bell System, excluding Western Electric Co. and Bell Telephone Laboratories, represented 64 per cent of total operating expenses other than taxes. The total pay roll, including Western Electric and Bell Telephone Laboratories, was $2,018,248,000, an increase of $227,332,000 over 1947 and $1,290,159,000 more than in 1941.—THE END.


CHANGES SINCE THE PREWAR PERIOD
BELL SYSTEM - 1948 COMPARED WITH 1941
EXPENSES UP 148%
REVENUES UP 102%
RATE OF RETURN ON CAPITAL DOWN 19%

Standardization helps make better telephones

It takes 433 parts of 48 different materials to manufacture a telephone set, yet the instrument itself accounts for only 7 per cent of the equipment needed to give telephone service.

IN manufacturing telephone equipment, Western Electric follows exacting standards which control every step of its processes, from preliminary drawings to final testing. The quality resulting from this standardization contributes to the dependability of America's telephone service—the most extensive and efficient in the world.

Western Electric

TELEPHONE APPARATUS AND CABLE

Washington Bureau Reports

(Continued from page 34)

available, and will extend its network service to 13 additional cities, the Long Lines Department of the American Telephone & Telegraph Co. has announced. By the end of this year, the Long Lines Department said, there will be 8200 channel miles of TV facilities in operation, spread over a Bell System intercity network extending 2850 miles and linking 27 cities.

By summer, under present plans, the 14 cities already on the television network will be joined by Providence, R. I., and Wilmington, Del. By fall, it is expected that the following cities will be linked—Lancaster and Erie, Pa., Rochester, N.Y., and Dayton, Columbus, and Cincinnati, Ohio. Toward the end of the year, it is planned to equip the existing coaxial route between New York City and Albany for television transmission and to extend it, by radio relay, to Syracuse, which would permit Bell System service to Schenectady, Utica and Rome as well.

Rates

THE WISCONSIN Telephone Co. is operating its intrastate services at an actual loss and requires immediate emergency rate relief, the company informed the Public Service Commission March 1 in asking for temporary increases subject to the final order on its $8.3 million rate increase application.

Asking the commission to add, to the temporary rate increases now in effect, elimination of the 25-cent discount for prompt payment and institution of the intrastate toll schedules as requested by the company in its filing, the Wisconsin Telephone Co. presented data to show that it operated the intrastate services at a loss of $5000 in the months of December, 1948, and January, 1949.

The application pointed out that the company, on the basis of the temporary increases granted in November, had estimated its intrastate rate of return at the annual level of 2.2% by the close of 1948. For the full year, the return on intrastate operations, covering 10 months actual results under the old rates and two months estimated under the temporary schedules, was computed to be 1.8%. But those figures were based on the 1948 wage levels, the company said, and subsequent to that time wage increases have been granted which increased its costs of operation substantially. The two months of December and January, for which the actual loss was shown, covered a period when the new wage rates were fully in effect.

If the commission should order downward revisions of any of the rates instituted on a temporary basis, the Wisconsin company said, it stands ready to make appropriate refunds to subscribers.

The $20.4 million rate increase application of the Michigan Bell Telephone Co. has been restored to the Public Service Commission docket, following what the commission termed the failure of the city of Detroit to appeal to the state Supreme Court to settle the question of whether the commission has the jurisdiction to consider a rate increase case while its 1945 rate reduction order is still pending in court.

Hearings were adjourned in January to permit the appeal, with a plea by Chairman Stuart B. White that the matter be settled "once and for all." The commission had denied a motion by the city of Detroit to dismiss the proceedings, and the state Supreme Court twice had refused to hear the city on the issue. Instead of the appeal to the Supreme Court, the city appealed to the Ingham Circuit Court at Lansing, with no prospect for an early ruling by the Supreme Court.

The commission, in scheduling resumption of hearing, said it "is now satisfied that no expeditious and diligent prosecution of an appeal of its action has been taken to the Michigan Supreme Court. While it is true that the city of Detroit has filed a review proceeding in the Ingham County Circuit Court, this was clearly not within the contemplation or intent of the commission in permitting the adjournment, for the reason that the same questions presented in such review are already before the Ingham County Circuit Court in another proceeding."—THE END.

STROMB

The churchill telephone booth

Churchill No. 100 Folding Door Telephone Booth

... Users appreciate its privacy and convenience

... Operating companies enjoy its profits

The records of many operating companies prove the Churchill No. 100 Folding Door Telephone Booth to be a builder of pay station business.

It is constructed as a single unit and equipped with reinforced back panel for mounting a wall telephone or coin collector.

Included as standard equipment are electric light and automatic electric ventilator.

Available in two finishes:

No. 100-A—selected white oak, in light or medium oak satin finish.
No. 100-B—birch, mahogany finish.

Overall height is 84¾"; width, 30½"; depth, 30½". Shipped knocked down and crated.

Illustrated literature available.

for wire dil

There certai mome tensio read, new l long satisfi and price and r Price

For pend foun most supp dire

With Rect nor sets char subs proc cost

STROMBERG-CA

STROMBERG Telephone CARLSON

Facto Branc Kansa Strom

TELEPHONES, SWITCHBOARDS • SO UIPMEN

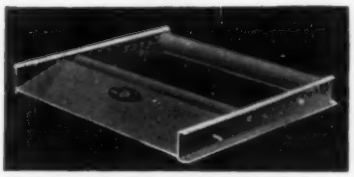
BERG-CARLSON recommends...

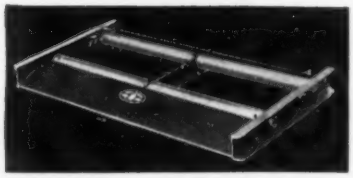
for accurate and rapid wire stringing or checking USE the dillon dynamometer

There's no guessing or uncertainty when a scientific Dynamometer is used to check wire tensions. *Easy* to use, *easy* to read, dead accurate. Works on new leads going up or *old* leads long established. Hundreds of satisfied owners in telephone and power fields. Reasonably priced. Decide *now* to save time and money with this useful tool. Prices on request.

roll-a-reel

handles heavy reels quickly, economically, and safely





STYLE A (top) Width 30″; Depth 28″; Height 3½″. Weight, 50 lbs. Capacity, 2000 lbs. Supports up to one 28″ wide reel.

STYLE B (below) Width 52″; Depth 28″; Height 4″. Weight, 110 lbs. Capacity 4000 lbs. Supports two 24″ wide reels or up to one 48″ wide reel.

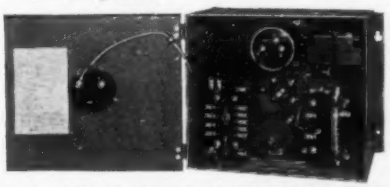
- Sturdily built, with heavy gauge steel frame to roll reels of wire, cable, steel strand or ropes.
- Separate sets of rigidly aligned ball-bearing rollers for each side of the large reels. No slipping or friction between rollers and reel.
- Ball-bearing rollers are at same level, so that cable can be safely taken from front or back, top or bottom.
- Amazingly low cost.

. . . bigger savings plus better service with raytheon rectifilters*!

For more than a decade, leading independent telephone companies have found that Raytheon Rectifilters are the most economical and efficient way to supply steady DC power to PBX boards directly from an AC source.

With no moving parts, the Raytheon Rectifilter requires neither adjustment nor maintenance. It will outlast many sets of batteries, release wires carrying charging current from central office to subscribers' PBX boards for revenue producing service, and minimize power cost because of high efficiency in converting from AC to DC.

Dry disc rectifying units and other components are designed for long-life, trouble-free service. The Raytheon Rectifilter will end your telephone power problems. Just plug it in, close the door —and forget it!



RFR 1044-G RECTIFILTER WITH DOOR OPEN

*Reg. U.S. Pat. Off.

RCARLSON

Factory, General Offices: Rochester 3, N.Y.
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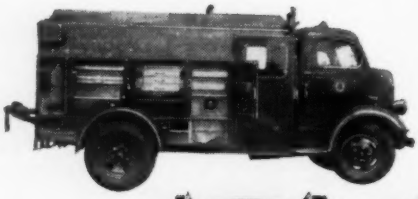
SOUIPMENT AND ELECTRONIC CARILLONS • INDUSTRIAL, INTERCOMMUNICATION SYSTEMS • RADIOS, RADIO-PHONOGRAPHS, FM AND TELEVISIO

the SAVINGS in LOWER

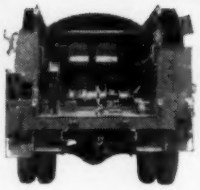
Maintenance costs by using

YORK-HOOVER BODIES

is just like EXTRA MONEY in the BANK

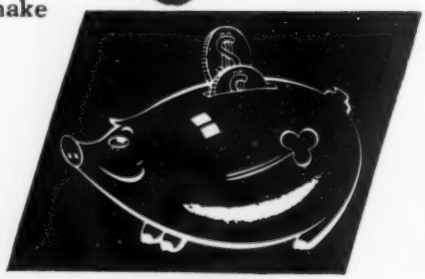


Model LCW-102



This light construction body is furnished with complete working equipment. Built in crew compartment provides maximum protection—adequate space is provided for all materials and tools—contributing factors which make the LCW-102 a profitable investment for you.

Write for the LCW-102 "facts" today!



YORK, YORK-HOOVER BODY DIVISION CORPORATION PENNA

Splicing

(*Continued from page 42*)

where six splicers were given splicing machines and completing from 18 to 21, 455-pair splices per week, the foreman could not attend all-day meetings, take care of the moves, order material, check the time reports, train the men and supervise the job. The only way to reduce the cost of splicing is with new methods, and modern tools that will increase

Modern method of preparing lead sleeve.

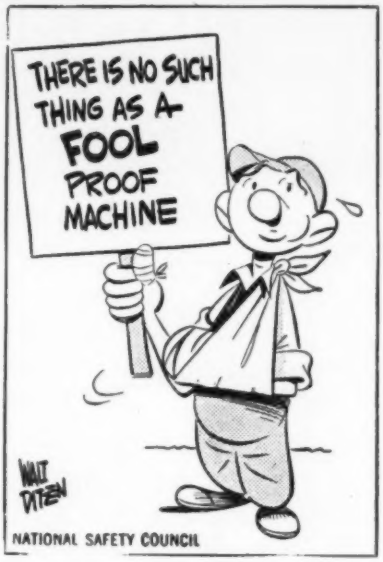
production with less effort. If we would take just the modern tools and new methods mentioned in this article and equip a foreman's gang as follows we would find a saving of over 50% and an improvement in service.

Trunk Or Toll Cable Foreman
Two Set-Up Crews, mounted
Six Splicing Crews, mounted
Six Splicing Machines
Six Modern Furnaces
Lead sleeves issued ready for use
Time reported to complete each splice

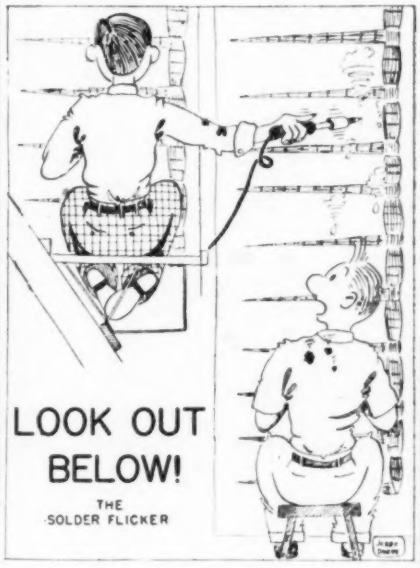
We think you will agree that these facts show a need for modernizing the splicing craft and the improvement in service, the saving in cost and the improved morale would warrant the effort. There is something fascinating about splicing and it could be made a more interesting career for men to follow if it were brought up-to-date.

If this article in some small way starts a movement to modernize the splicing craft which in turn will improve the service and reduce the cost it will have served its purpose.—THE END.

Telephone
Safety Tips


THERE IS NO SUCH THING AS A- FOOL PROOF MACHINE
WALT DITZEN
NATIONAL SAFETY COUNCIL

HOW CAN YOU SAY YOU DON'T KNOW HOW IT HAPPENED?
I WASN'T LOOKING
WALT DITZEN
NATIONAL SAFETY COUNCIL


LOOK OUT BELOW!
THE SOLDER FLICKER

YOU'RE LUCKY, HAP - THEY TELL ME THE FLOOR BROKE YOUR FALL
WALT DITZEN
NATIONAL SAFETY COUNCIL

IT'S GREAT TO BE OFF THE JOB AWAY FROM THEM SAFETY GUYS!
ALWAYS YAMMERIN' AWAY AT ME - BE SAFE - BE CAREFUL - BE CAREFUL - BE SAFE
THEY ACT LIKE I AIN'T DRY BEHIND THE EARS!
NATIONAL SAFETY COUNCIL
WALT DITZEN

SURE THEM HATS ARE OKAY - BUT HOW OFTEN DOES A THING LIKE THAT HAPPEN?
WALT DITZEN
NATIONAL SAFETY COUNCIL

HOW'D IT HAPPEN?
HORSE PLAY
SOME JOKE!
YEAH
WALT DITZEN
NATIONAL SAFETY COUNCIL
ALL I DID WAS SHOVE HIM DOWN THE STAIRS
BUT HE DIDN'T HAVE NO SENSE OF HUMOR!

A HANDBOOK for Telephone Men

INDEX: Open Wire Construction

DATE: March 15, 1949

*TABLE 4—Stringing Sags For HTL 135 Telephone Wire (No. 12 B.W.G.)

Long Spans in Heavy Loading Districts

Span Length (Feet)	Temperatures in Degrees Fahrenheit 110°	100°	90°	80°	70°	60°	50°	40°	30°	20°	10°	0°
	— Sag in Inches —											
200	15.0	14.0	13.0	12.5	11.5	11.0	10.0	9.5	9.5	9.0	8.0	7.5
210	16.5	15.5	14.5	13.5	12.5	12.0	11.0	10.5	10.0	9.5	9.0	8.5
220	18.0	17.0	16.0	15.0	14.0	13.0	12.0	11.5	11.0	10.5	10.0	9.5
230	19.5	18.5	17.5	16.0	15.0	14.0	13.5	13.0	12.0	11.5	10.5	10.0
240	21.5	20.0	19.0	17.5	16.5	15.5	14.5	14.0	13.0	12.5	11.5	11.0
250	23.0	21.5	20.5	19.0	18.0	16.5	15.5	15.0	14.0	13.5	12.5	12.0
260	25.0	23.5	22.0	21.0	19.5	18.0	17.0	16.0	15.0	14.5	13.5	13.0
270	27.0	25.5	24.0	22.5	21.0	19.5	18.5	17.5	16.5	15.5	15.0	14.0
280	29.0	27.5	25.5	24.0	22.5	21.0	19.5	18.5	17.5	16.5	16.0	15.0
290	31.5	29.5	27.5	26.0	24.0	22.5	21.0	20.0	19.0	18.0	17.0	16.0
300	33.5	31.5	29.5	28.0	26.0	24.0	22.5	21.5	20.5	19.5	18.5	17.5
310	35.5	33.5	31.5	29.5	27.5	26.0	24.0	23.0	21.5	20.5	19.5	18.5
320	38.0	35.5	33.5	31.5	29.5	27.5	26.0	24.5	23.0	22.0	20.5	19.5
330	40.5	38.0	35.5	33.0	31.0	28.5	27.5	26.0	24.5	23.5	22.0	21.0
340	43.0	40.5	37.5	35.0	33.0	31.0	29.0	27.5	26.0	24.5	23.5	22.0
350	45.5	43.0	40.0	37.5	35.0	33.0	31.0	29.0	27.5	26.0	25.0	23.5

These sags are such that the unloaded tensions at minus 10 degrees fahrenheit equal approximately one-fifth of the rated breaking strength of HTL 135 wire, for all span lengths shown above.

Long Spans in Medium Loading Districts

Span Length (Feet)	Temperatures in Degrees Fahrenheit 110°	100°	90°	80°	70°	60°	50°	40°	30°	20°	10°	0°
	— Sag in Inches —											
300	28.0	25.5	24.5	22.5	21.5	20.0	19.0	18.0	17.0	16.0	15.5	15.0
310	30.0	27.5	26.0	24.0	23.0	21.5	20.5	19.0	18.5	17.5	17.0	16.0
320	32.0	29.0	27.5	26.0	24.0	23.0	21.5	20.5	19.5	18.5	18.0	17.0
330	34.0	31.0	29.5	27.5	26.0	24.5	23.0	21.5	20.5	19.5	19.0	18.5
340	36.0	33.0	31.0	29.0	27.5	26.0	24.5	23.0	22.0	21.0	20.0	19.5
350	38.0	35.0	33.0	31.0	29.0	27.5	26.0	24.5	23.5	22.0	21.5	20.5
360	40.5	37.0	35.0	33.0	31.0	29.0	27.5	26.0	24.5	23.5	22.5	21.5
370	43.0	39.0	37.0	34.5	32.5	31.0	29.0	27.5	26.0	25.0	24.0	23.0
380	45.0	41.0	39.0	36.5	34.0	32.5	30.5	29.0	27.5	26.0	25.5	24.5
390	47.5	43.5	41.0	38.5	36.0	34.0	32.0	30.5	29.0	27.5	26.5	25.5
400	50.0	45.5	43.0	40.5	38.0	36.0	34.0	32.0	30.5	29.0	28.0	27.0
410	52.5	48.0	45.0	42.5	40.0	38.0	36.0	33.5	32.0	30.5	29.5	28.5
420	55.0	50.0	47.5	44.5	42.0	40.0	37.5	35.5	33.5	32.0	31.0	30.0
430	58.0	52.5	50.0	47.0	44.0	42.0	39.5	37.0	35.5	33.5	32.5	31.0
440	60.5	55.0	52.0	49.0	46.0	43.5	41.0	39.0	37.0	35.0	34.0	32.5
450	63.0	57.5	54.5	51.0	48.0	45.5	43.0	40.5	38.5	36.5	35.5	34.0

These sags are such that the unloaded tensions at zero degrees fahrenheit equal approximately one-fifth of the rated breaking strength of HTL 135 wire, for all span lengths shown above.

Long Spans in Light Loading Districts

Span Length (Feet)	Temperatures in Degrees Fahrenheit 100°	90°	80°	70°	60°	50°	40°	30°	20°	10°	0°	-10°
	— Sag in Inches —											
350	35.0	32.0	30.0	28.0	26.5	25.0	23.5	22.5	21.0	20.0	19.5	19.0
360	37.0	33.5	31.5	30.0	28.0	26.5	25.0	23.5	22.5	21.5	21.0	20.0
370	39.0	35.5	33.5	31.5	29.5	28.0	26.5	24.5	23.5	22.5	22.0	21.0
380	41.0	37.5	35.0	33.0	31.0	29.5	28.0	26.5	25.0	24.0	23.0	22.0
390	43.0	39.5	37.0	35.0	33.0	31.0	29.5	27.5	26.0	25.0	24.0	23.5
400	45.5	41.5	39.0	36.5	34.5	32.5	31.0	29.0	27.5	26.5	25.5	24.5
410	47.5	43.5	41.0	38.5	36.5	34.5	32.5	30.5	29.0	28.0	27.0	26.0
420	50.0	46.0	43.0	40.5	38.0	36.0	34.0	32.0	30.5	29.0	28.0	27.0
430	52.5	48.0	45.0	42.5	40.0	38.0	35.5	33.5	32.0	30.5	29.5	28.5
440	55.0	50.0	47.0	44.5	42.0	40.0	37.5	35.5	33.5	32.0	30.5	29.5
450	57.5	52.5	49.5	46.5	44.0	41.5	39.0	37.0	35.5	33.5	32.0	31.0
460	60.0	55.0	51.5	48.5	46.0	43.5	41.0	38.5	37.0	35.0	33.5	32.5
470	62.5	57.5	54.0	50.5	48.5	45.5	43.0	40.5	38.5	36.5	35.0	34.0
480	65.5	60.0	56.0	53.0	50.0	47.5	44.5	42.0	40.0	38.0	36.5	35.5
490	68.0	62.5	58.5	55.0	52.0	49.5	46.5	44.0	42.0	39.5	38.0	37.0
500	71.0	65.0	61.0	57.5	54.5	51.5	48.5	45.5	43.5	41.0	39.5	38.5

These sags are such that the unloaded tension at zero degrees fahrenheit equal approximately one-fourth of the rated breaking strength of HTL 1935 wire, for all span lengths shown above.

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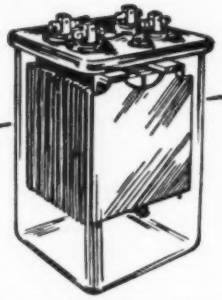
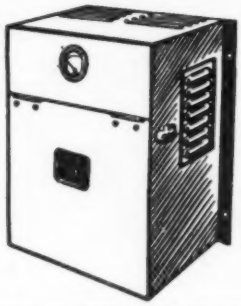
5 reasons why your best POWER SUPPLY is GraybaR

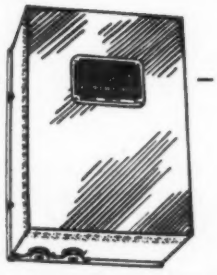


1 EXIDE STORAGE BATTERIES — in a range of types and sizes designed for telephone service.

2 EVEREADY COLUMBIA GRAY LABEL DRY CELLS — the long-lived Eveready cells for local battery service.



3 BATTERY CHARGERS — your choice of Electrox, Flotrol, General Electric, or Raytheon.



4 RINGING MACHINES — Lorain Sub-Cycle for straight-line ringing; Holtzer-Cabot or Leich for harmonic ringing.

5 GRAYBAR SERVICE — prompt deliveries from our near-by warehouse — plus the free help of a Graybar Telephone Specialist in solving any problem you may have.

The items shown here are typical in quality of the hundreds of telephone supplies which you can get from Graybar. Next time you want information on *any* power supply item or *anything* electrical, call Graybar. You'll get quality products and dependable service. *Graybar Electric Company, Inc. Executive offices: Graybar Building, New York 17, N .Y.* 4922

Everything in Telephone Supplies Via GraybaR

IN OVER 100 PRINCIPAL CITIES

Expansions

(Continued from page 55)

Brunswick:—D. W. Mason, manager of the Indian Grove Telephone Co., advises that the company will completely rebuild its outside plant facilities and install new central office equipment. Expenditures have been estimated at $12,500.

Marshfield:—L. H. Garst, owner of the Webster County Telephone Co. anticipates spring construction expenditures of $10,000 with the amount divided between outside plant expansion and rebuilding.

Potosi:—Claude H. Downard, manager of the Potosi Telephone Co., reports that spring construction expenditures covering outside plant expansion will total $20,000. He states the company is working on a $35,000 expansion program with the possibility of "more to come."

NEBRASKA

Aurora:—The Hamilton County Farmers' Telephone Association reports its spring construction activities will require expenditures of $27,000. D. M. Davis, general manager, states outside plant expansion will cost $15,000; outside plant rebuilding $10,000, and rebuilding central offiec equipment $2,000.

Coleridge:—Approximately $2,000 will be spent by the Coleridge Telephone Co. for rebuilding portions of its outside plant. Manager Louis C. Doelz, stated that the company sustained considerable sleet storm damage and the $2,000 expenditure will "about cover necessary repairs."

Columbus:—G. A. Klein, general manager of the Nebraska Continental Telephone Co., reports a $90,000 spring construction program. Mr. Klein states the expenditure will be divided as follows; $30,000, outside plant expansion; $20,000, rebuilding outside plant, and $40,000 for new central office equipment.

Oakdale:—George Dougherty, manager of the Oakdale Telephone Co.; advises that spring construction expenditures of the Oakdale company will require an expenditure of $2,000 for rebuilding outside plant.

NEW YORK

Dalton:—W. L. Kelley, manager of the Dalton Telephone Co., estimates that the company's planned spring construction program will require an expenditure of $2,000. Mr. Kelley reports outside plant rebuilding will cost $1,100 and new central office equipment, $900.

Nassau:—Columbia & Rensselaer Telephone & Telegraph Co. has announced spring construction program involving expenditures of $78,000. Robert M. Dean, manager, states $20,000 has been allocated for outside plant expansion, $20,000 for outside plant rebuilding and $38,000 for new central office equipment. Most of the material for the project is on hand or on order.

NORTH CAROLINA

Mebane:—The Mebane Home Telephone Co. has scheduled a $19,000 constructioin program, alloting $10,000 for outside plant expansion and $9,000 for central office equipment.

Oldfort:—Ashby Robinson, manager of the Old Fort Telephone Co., advises that scheduled projects covering plant rebuilding will require expenditures of approximately $6,000.

NORTH DAKOTA

Westfield:—The Overland Telephone Co., Westfield, North Dakota, has scheduled a construction-improvement project that includes metallicizing of all lines and installation of a new magneto switchboard. John Rowerdnick estimates that approximately 200 miles of line wire will be reqiured to complete the plant rebuilding project.

OKLAHOMA

Fairview:—The Home Telephone Co., estimates spring construction activities will require expenditures of $21,000. Manager, E. R. Arnold, reports outside plant expansion projects total $6,000; outside plant rebuilding $5,000, and new central office equipment, $10,000.

Reydon:—Alvin Flesher, owner of the Reydon Telephone Co., has announced that outside plant rebuliding scheduled for spring will cost $500.

Shidler:—$10,000 will be expended by the Shidler Telephone Co., during the spring of 1949. I. J. White, manager, states plant rebuilding will cost $2,000 and $8,000 will be invested in new central office equipment.

OREGON

Silverton:—Lowell E. Brown, manager of the Interurban Telephone Co., advises that the company's spring construction program will result in expenditures of $7,600. Breakdown of the expenditures show, $2,000 scheduled for outside plant construction, $5,000 for outside plant rebuilding, $500 for new central office equipment, $100 for rebuilding central office building.

PENNSYLVANIA

Birdsboro:—J. K. Stoltzfuss, vice president and manager of the Connestoga Telephone & Telegraph Co., has estimated the company will have ex-

THE TELEPHONE ABROAD

THE SWISS are planning to make life not only easier but also a great deal safer for mountain climbers. They are accomplishing this by installing wireless telephones at stations on remote mountain crags and crevices where unlucky climbers are apt to have accidents.

As a rule when anyone is injured high up on the mountain peaks, it means that some other member of the party must make the long, slow descent into the valley to summon aid. The new apparatus is a great time saver for it will make it possible to dial quickly any telephone in the valley for help.

Two-way conversations are possible over this mountain telephone service. Residents in the valley will be able to call the mountain stations at certain hours. Eight of these stations have already been installed.

This radio-telephone may not be as colorful a means of communication as some, but in times of stress it is a great deal more certain than sitting back and yodeling for a St. Bernard dog.

It would be interesting (if for no other reason than as a challenge to the rate and route operators) to place a call to the Welsh village of Llanfairpwllgwyngyllgogerychwyrndrobwllandisiliogogogoch—which is allegedly the longest place name in the world.

However, according to the *London Times*, New Zealand is a close runner up for the honor of possessing the largest and the most jawbreaking name. It's a Maori hilltop near the village of Porangahua and it's called (and we'll let you do the calling) Taumatawhakatangihangakoauautotamateapokaiwhenuakitanatahu.—(Reprinted from The BLUE BELL.)

penditures of $55,000 during the spring of 1949. Mr. Stoltzfuss states that the expenditure will be divided as follows; plant expansion, $10,000; plant rebuilding $15,000, and new central office equipment, $30,000.

Callensburg:—Spring construction activities of the Callensburg Telephone Co. will include the complete rebuilding of eight miles of line.

Lake Como:—A. E. Vonaux of the North Wayne & Progress Telephone Co. stated recently that the company's expansion depends on "business prospects of subscribers." The company has scheduled $1,700 for spring construction activities. This amount includes $1,200 for outside plant expansion, $300 for rebuilding outside plant and $200 for central office equipment.

New Bethlehem:—The Community Telephone Co. has scheduled a $30,000 spring construction program with the expenditure equally divided between outside plant expansion, outside plant rebuilding, and new central office equipment. Manager Charles A. Lampel states the company plans to install new automatic switchboards at Oakland and Sligo, Pa.

Selinsgrove:—Middlecreek Valley Telephone Co., has an expansion program in progress which will entail the expenditure of over $250,000. Frank A. Eyer, company secretary, reports the installation of automatic equipment will make necessary the construction of three exchanges.

West Springfield:—The Springfield Telephone Co. has scheduled a $3,000 expenditure for spring construction projects. Manager Ames E. Brown states outside plant expansions will require an expenditure of $2,000 and outside plant rebuilding $1,000.

SOUTH DAKOTA

Groton:—Groton Ferney Mutual Tel. Co. reports planned expenditures of $3,000 for rebuilding outside plant facilities during the 1949 spring construction period.

Mound City:—R. Kramlieb, secretary, Missouri Valley Telephone Co., has announced an $8,000 plant expansion project. Mr. Kramlieb states that due to REA construction the company will metallicize 120 miles of line.

The Missouri Valley company serves the towns of Herreid, Glenham, Pollack and Mound City. Mr. Kramlieb recently told TELEPHONE ENGINEER publications—"our equipment is getting old and will have to be replaced soon. We plan on going automatic which will cost about $30,000.

TEXAS

Anahuac:—The Chambers County Telephone Co. will continue present expansion-improvement programs during 1949. According to C. G. Mendenhall the company expects to extend and rebuild 70 miles of lines. The company is also expanding its rural facilities to bring service to additional subscribers. Approximately 15,000 feet of cable is being used to expand present cable plant.

Bogata:—A $9,000 construction project is reported by Guy Smelser, owner of the Bogata Telephone Co. Cost of rebuilding the outside plant is estimated at $4,000; cost of new central office equipment will be $5,000. Mr. Smelser advises that the company spent over $10,000 for rebuilding its properties in 1948.

Buna:—B. Mitchall, manager of the Buna Telephone Exchange reports a $2,950 rural expansion program.

Humble:—D. V. Kersch, manager of the Home Telephone Co., has advised that the company will have expenditures of $10,000 during the spring of 1949. $8,000 is scheduled for outside plant expansion and $2,000 for rebuilding outside plant.

Martindale:—Thomas J. Fowler, Jr., manager of the Martindale Telephone Co., advises that the Martindale company has scheduled 1500 for outside plant expansion and $6,000 for rebuilding outside plant during the spring construction period.

St. Jo:—The St. Jo Telephone Co. anticipates expenditures of $12,000 during the spring of 1949. W. E. Nunnely, owner, advises that outside plant expansion projects will require expenditure of $5,000; outside plant rebuilding $4,000; new central office equipment $1,000, and rebuilding central office equipment, $2,000.

VERMONT

Perkinsville:—Spring construction activities of the Perkinsville Telephone Co. will result in expenditure of $1,000. The company expects to spend $700 on plant expansion and $300 for plant rebuilding.

WASHINGTON

North Bend:—Cascade Telephone Co. has announced an extensive modernization program including conversion to automatic operation. The project will represent an expenditure of approximately $96,000, distributed as follows; $3,850 for outside plant expansion, $9,005 for outside plant rebuilding and $83,000 for new central office equipment. The company recently completed erection of a $20,000 fireproof building.

Tonasket:—M. E. Alexander, manager of the Tonasket Telephone Co. has estimated spring construction expenditures at $7,000; $3,000 for expansion of outside plant and $4,000 for rebuilding outside plant.

WHAT—

Nylon CORDS?

Yes—and they're

1 **TOUGH**
Nylon thread used for the covering of these cords provides a superior tough outer braid capable of hard service.

2 **DURABLE**
Switchboard cords are subject to severe wear. Nylon covering gives long and exceptionally satisfactory service under hard usage.

3 **WATER-PROOF**
Chemists recognize Nylon as a material highly resistant to moisture and acids.

4 **MILDEW-PROOF**
Where mildew is likely to occur these Nylon cords are immune to its destructive action.

5 **RUGGED**
The unusual tensile strength of Nylon provides a ruggedness far beyond other types of cords.

6 **BEAUTIFUL**
The very name Nylon suggests beauty, quality and refinement. These cords live up to the name in every respect.

ASK FOR

Runzel V.N. SERIES Nylon SWITCHBOARD CORDS

RUNZEL
Cord and Wire Co.
1723 W. MONTROSE AVE.
CHICAGO 13, ILL.

TRIBUTE
to a Task Force

With brush and pen, the advertisement on the opposite page paints a portrait of the men "out on the line." Appearing in national magazines during March, it is a tribute to the teams who build and maintain millions of miles of the nation's voiceways.

An advertisement of the Bell Telephone System

He Helps to Get the Message Through

ILLUSTRATION BY NORMAN ROCKWELL

Along the highways of speech, in every part of the country, thousands of Bell telephone linemen help to keep your telephone service good — and make it better.

They are on the job to maintain uninterrupted service over millions of miles of wire and cable—repair trouble when it occurs and try to anticipate it before it occurs.

They are the men who push forward the lines of communication to new places and new people—through cities and towns, across deserts, under rivers and over mountain tops. By breaking all construction records since the war, they have played an important part in the constant improvement in telephone service.

In the everyday doing of the job, as in the dramatic emergencies of fire and storm, the telephone linemen help to get the message through.

BELL TELEPHONE SYSTEM

Printing

for Telephone Companies

AS YOU WANT IT

From Suttle—You can get stock forms to help handle plant reports and office accounting efficiently.

From Suttle—You can get billing forms, envelopes, letter heads or any other material printed to your special order.

For years we have specialized in printing for telephone companies and we understand your requirements.

An inquiry about your needs will be given careful attention.

•

SUTTLE EQUIPMENT CO.
LAWRENCEVILLE, ILLINOIS

DEPEND ON SUTTLE

SPLICER'S TOOLS
Of Top Quality by **UNIQUE**

- FURNACES
- SOLDER POTS
- BLOW TORCHES
- WIPING CLOTHS
- BALANCED LADLES
- SOLDERING IRON HANDLES
- THAWING TORCHES
- FOLDING SAFETY SHIELDS

Protect Public, Splicer, and Furnace. No. 50 C Shield shown here. of 20 Ga. galvanized steel. Reinforced edges. 23"x17"x17". No. 50—four-sided with grate. No. 50 A—same without grate.

Your Jobber Has These Tools

UNIQUE MANUFACTURING CO., INC.
221 W. Walton St., Chicago 10, Ill

News Briefs

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(Continued from page 32)

•

operations, to succeed Mr. Gillen. He was also elected a director. He will be succeeded by James E. Dingman, assistant to vice president and general manager, Long Lines Department of the A. T. & T. Co.

Carl R. Freehafer, vice president and general manager of the company's Eastern Pennsylvania Area, was named vice president in charge of staff, while J. Frank Cox, vice president and general manager in western Pennsylvania was appointed vice president and general manager, Eastern.

John C. Longstreth, vice president and general manager, Central Pennsylvania Area will become vice president and general manager, Western Pennsylvania Area. Henry T. Inman, general commercial manager in Eastern Pennsylvania has been named vice president and general manager in Central Pennsylvania, with headquarters in Harrisburg.

Ray S. Tannehill, secretary and treasurer, was named vice president in charge of revenue and finance. He will continue to act as secretary and treasurer.

Mr. Gillen has been associated with the Bell Company since 1923 when he started as a clerk in the company's commercial department in Philadelphia, shortly after graduating from the Wharton School of the University of Pennsylvania.

In 1927, he was appointed training nd sales supervisor and became general sales manager in Eastern Pennsylvania in 1929. In 1936, he was made division manager in Philadelphia, a post he held until 1938 when he was named general commercial manager for central Pennsylvania.

After a brief stay there, he returned to Philadelphia as assistant vice president, going back to Harrisburg in 1941 as vice president and general manager of the company's central Pennsylvania area. He held this post until 1947 when he became vice president, operations.

He served as State Chairman of the USO campaign in 1946 and was active in Red Cross, Boys' Club, Community Chest and other community affairs in Harrisburg. He is also a former president of the Sales Managers' Association of Philadelphia.

He is a director of the Philadelphia National Bank and a member of the Racquet Club, the Philadelphia Country Club, the Duquesne Club of Pittsburgh and the Harrisburg Country Club. He is married and has three children and lives in Bryn Mawr.

The retirement of Mr. Chesterman brings to a close an active telephone career which started in 1905 when he joined the American Telephone and Telegraph Company, after graduating from the Massachusetts Institute of Technology. He transferred to the New York Telephone Company in 1907 and came to Bell of Pennsylvania in 1920 as chief engineer, a post he held until 1926 when he was named vice president and general manager of the company's Western Area, with headquarters in Pittsburgh. He was elected vice president, operations, in 1941 and president in 1947.

He has been active in many fields. He is a former president of the Public Charities Association of Pennsylvania. He was the first president of Philadelphia Veterans Advisory Service, formed to help returning service men, and he has been very active in Boy Scout work for many years. He is also affiliated with a number of scientific, trade, charitable and cultural organizations.

Rate Increase Approved For Four Kansas Exchanges

Telephone rates of the American Telephone Co. in Valley Falls, Burlingame, Delphos and Highland, Kansas were increased by a recent order of the Kansas Corporation Commission.

Average per-subscriber increase will be approximately about $4.50 a year.

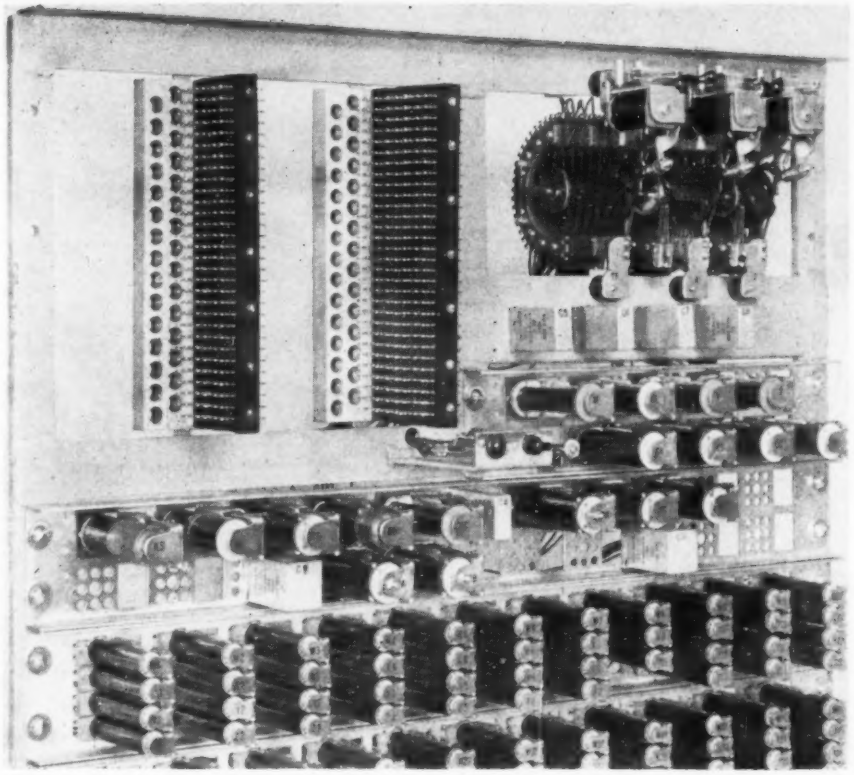
Rates will be figured to raise $5,121 added yearly income in Valley Falls, with 658 telephones. In Burlingame revenue will be increased $2,463 on 558 telephones. Delphos will add $2,367 on 436 telephones and Highland $2,466 on 507.

The Valley Falls increase is contingent on building of a new common-battery plant, and will not go into effect until the plant is completed and inspected by commission engineers.

Tennessee Commission Approves Lewisburg Rate Increase

The Tennessee Utilities Commission has approved slight increases in the rates for The Cities Telephone Co., Lewisburg, Tenn.

Under the new rates, effective February 1, business telephone rates were $3.75 per month; private residence telephones $2.50 and four-party lines $4.00.



Automatic accountant "remembers" everything a phone company needs to know about a toll call. When the subscribers hangs up, the stored information is sorted to . . .

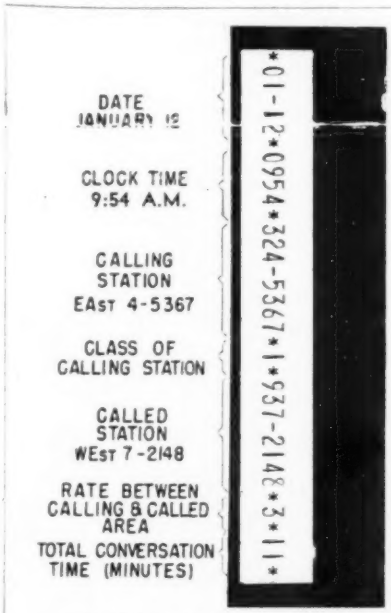
Magazine Describes Automatic Toll-Ticketing System

January 29, 1949 issue of *Business Week* presented details of the automatic toll-ticketing and electric key punch billing system being installed by Sunland-Tujunga Telephone Co., Sunland, Calif.

Publication of the article followed appearance of a story in the December 11, 1948 issue of *Business Week* describing Bell's new automatic toll ticketing and billing machine. Upon appearance of this story, J. T. Naylor, vice president and general manager of the Sunland-Tujunga Telephone Co., wrote the following letter to *Business Week*: "Regarding your article entitled "Machine Keeps Books" (BW—Dec. 11 '48, p 21):

"My company being one of some 6,000 independent telephone companies serving, together, over two-thirds of the area of the United States, I share with my other colleagues in the independent telephone industry a sincere admiration for the magnificent achievements of the Bell Telephone Laboratories. Notwithstanding this, however, we in the independent telephone field sometimes sense that our "big brother" in the business tends by its very size to overshadow some of the significant achievements of the independent telephone suppliers and independent telephone companies. Automatic Electric of Chicago, Stromberg-Carlson Co., of Rochester, N. Y., Kellogg Switchboard & Supply Co., of Chicago, North Electric Co. of Galion, Ohio, and several other general and specialty supply manufacturers periodically develop revolutionary techniques in the telephone business. Without in any way discrediting the Bell System and its affiliate, these independent suppliers do keep the Bell Labs and Western Electric "on their toes" as these smaller companies more than make up for their lack of size in their dynamic research policies.

"Automatic Electric Co. was the orig-



Toll ticket that shows in code numbers the vital facts on a particular call.

WHY PUT UP WITH THIS?

WHEN YOU CAN HAVE THIS...

THE NEW KOILED KORD

FOR ONLY 75c

Give your customers the finest, longest lasting, most convenient telephone cord without extra cost to them.

The new Koiled Kord uses tinsel conductors, rubber insulated to provide maximum flexibility and minimum pull. The jacket is neoprene to protect against moisture, grease, acids, oil, perspiration and other damaging materials. The neoprene jacket resists abrasion and the patented koil prevents kinking thereby eliminating two of the greatest enemies of old fashioned fabric cords.

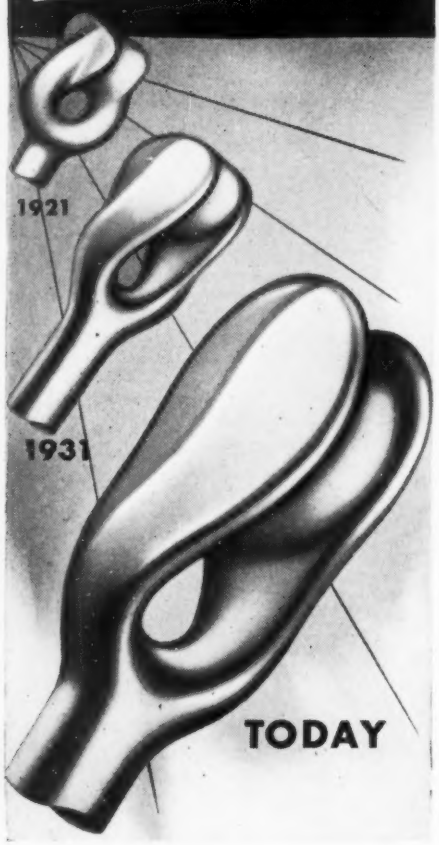
Measuring only a little over 8 inches long, the new Koiled Kord has an O.D. of .195 inches and weighs less than 2¼ ounces. It has a pull of only 1 pound when extended to its full length of approximately four feet.

Koiled Kords available trimmed to fit all standard desk sets. Specify type when ordering through your Independent Telephone Supplier.

Koiled Kords
INCORPORATED
BOX K,
HAMDEN CONNECTICUT

Why Use OBSOLETE Guying EQUIPMENT?

CHANCE *Improved* THIMBLEYE
The Only NEW Anchor Rod on the Market
Gives Complete Strand Protection



Only Chance and Chance licensed Anchor Rods and Guying Fixtures have the improved full-rounded Thimbleye that gives complete guy strand protection.

Each step in the evolution of the Chance Thimbleye, as shown in the photographs above, has been a definite contribution to better guying and each step has kept Chance ahead of competition.

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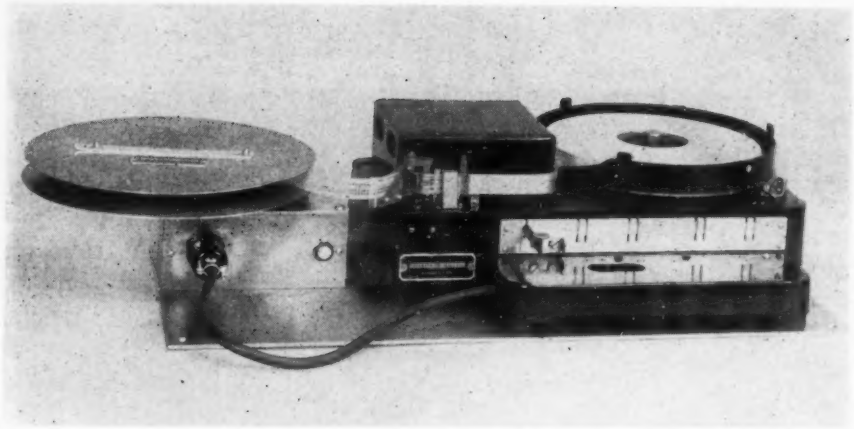


Tape perforator, which punches the data on a paper tape. The tape can be routed into a punch card machine for billing, or sent to a "toll ticketer," which produces the coded toll ticket.

inator of dial telephone operation as it is now generally known. . . .

"The 'Machine Keeps Books' article strikes very close home to my company, as we have developed for installation in March, 1949, and full commercial operation by midsummer, an 'automatic toll-ticketing and electric key punch billing procedure' which we believe to be equally significant with the Bell Laboratories' development. . . .

"John E. Ostline of Automatic Electric Co. developed the system. He is regarded by most of us in the independent telephone industry as one of the leading telephone research engineers of his time."

Business Week acknowledged Mr. Naylor's letter in the January 29 issue with he following article describing toll billing equipment to be installed by the Sunland-Tujunga company:

"Some small, independent telephone companies keep their research ears cocked, like the big operators. And they follow through on what they learn.

"*No Hands*—Such a company is Sunland-Tujunga Telephone Co., California. Within the next few months, it will completely mechanize toll-call accounting. Hands and heads are practically out of the picture. Automatic equipment will prepare toll tickets; punchcard machines will replace typewriters and accounting machines. All recording and accounting procedures—from the time the subscriber lifts the receiver to the time his bill for the call is made out—will be done by machines instead of girls.

"Not long ago, Bell Telephone Laboratories took the wraps off its automatic accounting system (BW—Dec.11'48, p21). The Bell machines take the message data, figure the length of the call, print up the data ready for posting.

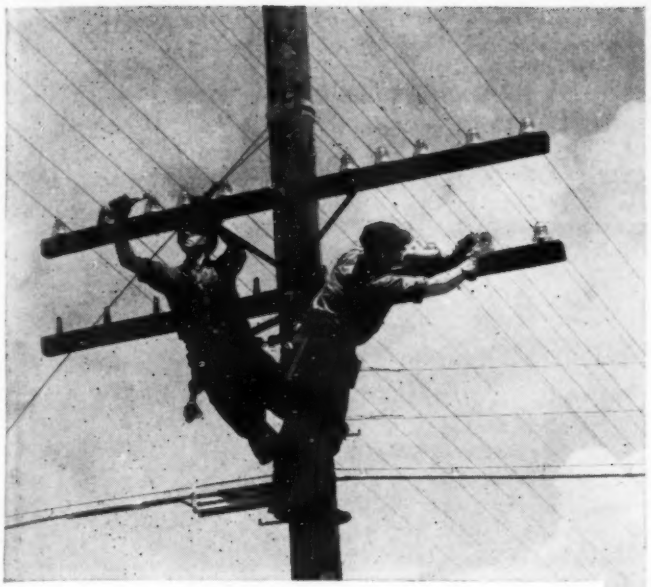
"*Further Step*—Sunland's proposed system goes a step further: It makes up the final bill from the recorded data, too. All the girls will have to do is transfer teletype-like tapes and tabulating cards from one machine to another.

"Automatic toll-ticketing isn't entirely new to the small phone companies. With their smaller installations they can often experiment with innovations before the big Bell outfits are ready to. The Strowger system to be installed by Sunland was developed by Automatic Electric Co., Chicago, several years ago. An experimental installation was completed at the Santa Monica exchange of Associated Telephone Co., Ltd., in 1944.

"*Strowger System*—Here's how the Strowger system works. Instead of giving the toll-call number to an operator, the subscriber dials the exchange and number he is calling. (The system is used only on suburban calls, now.) The equipment gets the signal to listen in when the caller starts to dial. The equipment records the call and the number; it notes the date, length of call, the calling subscriber's service classification, unit rate, and anything else the biller needs to know. It can also compute the charges.

"*Punch It Out*—When the caller hangs up, that gives the system another signal. The equipment starts turning out a punched tape to register what it has just 'heard'. The tape is like a teletype tape (Bell's machine embosses rather than punches a tape). Once the information is registered, the tape can be fed into a machine that will convert it into a toll ticket for billing. Or, and this is what the system will eventually do, it can be fed into another machine that converts the punches right into a final bill.

"The heart of the system is a bunch of electromechanical switches and relays. These guide the call, and do the 'remembering.' The system includes the Strowger Automatic 'Director.' This translates the exchange code dialed by the subscriber into a sequence of digits, and thus routes the call over the preferred lines. If the routes are busy, it can choose an alternate route. The director



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Amertel-135 is especially adapted to long span construction. It has tensile strength 2½ times as great as B.B. grade wire, yet it has very low electrical resistance.

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Stretches your power dollar. Flotrol units reduce power costs up to 20% per year, savings you can't afford to miss.

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Keeps your battery fully charged. Flotrol maintains full floating voltage of 2.15 plus or minus 1% on each battery cell. Your battery is ready to meet any emergency. Puts battery on "standby" orders. With Flotrol your battery becomes only an emergency worker —it stands silently by, at rest, without the wear and tear of normal working conditions. Flotrol does all this without moving a single part!

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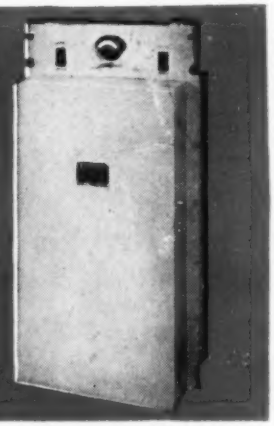
Flotrol contains no moving parts. Vacuum tubes, motors and other expendables have been designed *out* of Flotrol! Mechanical failure, disrupting service, is impossible.



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One piece aluminum sleeve adjusts from 15" to 18" in multiples of ½". Locked in place with standard steel screws.

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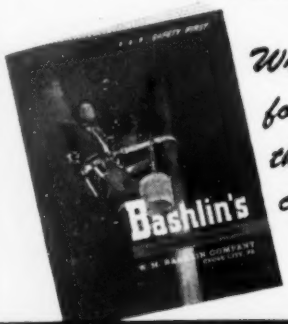
Comfort on the job, lightness and safety combine in Bashlin's adjustable Climber with removable gaff . . . Forged of aluminum alloy, the Bashlin Climber is lighter than conventional climbers and the *Same Strength as Equivalent Steel.* It's form fitting and has all the original Bashlin features.

No. BD 14

Removable gaff forged from alloy steel, features triple locking device with standard tested steel screws.



Write for this catalog

W.M. BASHLIN COMPANY
GROVE CITY 1, PA.

also can distinguish between local and extended-service subscribers and determine which calls are charge, which are free.

"Sunland will feed the teletype tape information through International Business Machines equipment that works with conventional I.B.M. accounting cards. The cards will carry all data in the form of punches. Stuck into other machines, they can print up bills, tote up statements, do other accounting tricks.

"Wide Field—There are about 6,000 independent phone companies in this country now. They serve about two-thirds of the area of the U. S. In all, U. S. phones number about 38-million; of these, Bell has about 31.3-million, or 80%; the independents carry have the rest.

"The Independents carry on research programs in cooperation with Independent suppliers like Automatic Electric, Stromberg-Carlson, Kellogg Switchboard & Supply, North Electric, and others.

"Toll-Dialing, Too—Automatic toll-ticketing isn't the only trick in the independent's bag. They have been working for some time on operator toll-dialing (BW—Jan.15'49,p44). Their claim: They used it—on a small scale—30 years ago."

City Manager of Anchorage, Alaska Confers With Kellogg Offficials

Donald R. Wilson, city manager of Anchorage, Alaska, conferred recently with James H. Kellogg, president, F. M. Parsons, sales manager, and C. D. Manning, vice president of Kellogg Switchboard & Supply Co., Chicago, on methods of cooordinating the shipping of nearly $1,000,000 worth of telephone equipment to be installed by the city-owned Anchorage telephone division with the opening of the Alaskan city's new telephone exchange building March 31.

Also discussed at the meeting at the Kellogg Chicago plant were preliminary details on installation and cut-over of Anchorage's new dial Relaymatic switchboard.

Sunland-Tujunga Automatic Conversion

A new Los Angeles "Florida" automatic exchange was cut into service by the Sunland-Tujunga (Calif.) Telephone Company at midnight on Saturday, February 12, 1949. The 2500-line, 5000-terminal, Strowger automatic Director switching office was manufactured and installed by Automatic Electric Company, of Chicago, Ill., displacing a 12-position manual switchboard.

The new "Florida" office is a part of the Los Angeles Metropolitan Area telephone network, coordinated with 34 other telephone exchanges in the metropolitan area and equipped to give full dialing service to most of Southern California.

The Director type switching unit

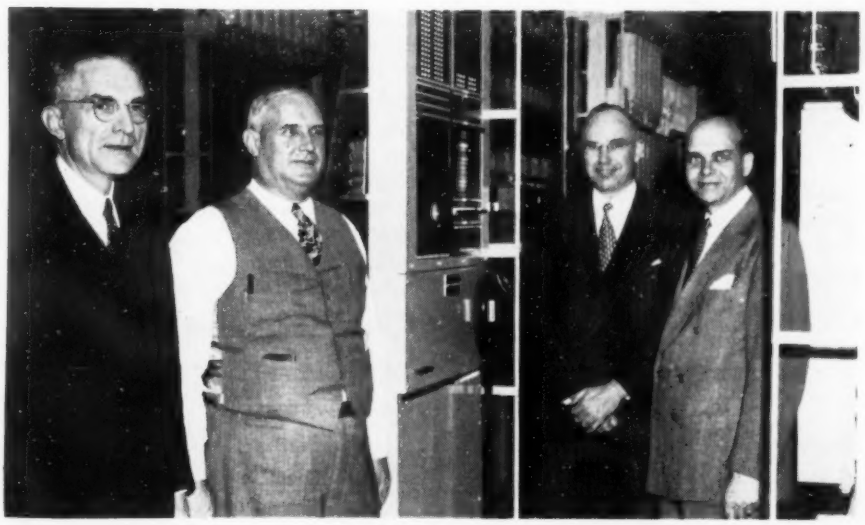
Left to Right: WILLIAM CONNOLLY, manager of the Anchorage, Alaska telephone division; JAMES H. KELLOGG, president of Kellogg Swbd. & Supply Co., and DONALD R. WILSON, city manager of Anchorage.

Sunland-Tujunga Telephone Company Building.

installed in the new office is a forerunner of complete Strowger Automatic Toll Ticketing service and direct subscriber dialing into all of the Los Angeles Metropolitan Area scheduled for installation by September, 1949. Immediate operator toll dialing service was inaugurated with the February 12 cutover preparatory to offering the direct dialing facilities to all subscribers later in the year. The Automatic Toll Ticketing feature will give subscribers of the new "Florida" exchange located in the Sunland-Tujunga community of Los Angeles dialing access to approximately one million telephones. Toll tickets will be prepared automatically by perforating a Teletype tape which in turn will be interpreted by International Business Machines accounting equipment for summation on the subscriber's bill.

This automatic conversion culminates a three-year construction program during which the company's investment has been increased from $200,000 to $1,437,000. During 1946, 1947 and 1948 extensive additions to outside plant, the construction of new buildings and the replacement of all telephone instruments with modern dial type telephones were also completed. Since the War the company has grown from 1,722 telephones in service to 4,309 telephones in service.

Sunland-Tujunga Telephone Co. is managed and engineered by J. T. Naylor, vice president and general manager; other officers being A. Adams, Jr., president; T. W. Bernhard, vice



At the Sunland-Tujunga Telephone Company Automatic Cutover on February 12, 1949; standing at Director Monitor Panel, left to right: Walter B. Wessells, telephone & telegraph engineer, Public Utilities Commission of California; Edward Swartz, staff operating engineer, Automatc Electric Company, Chicago; H. F. Lello, vice-president and general manager, Automatic Electric Company, Chicago, and Neil C. Brogger, assistant vice-president, Bank of America, San Francisco.

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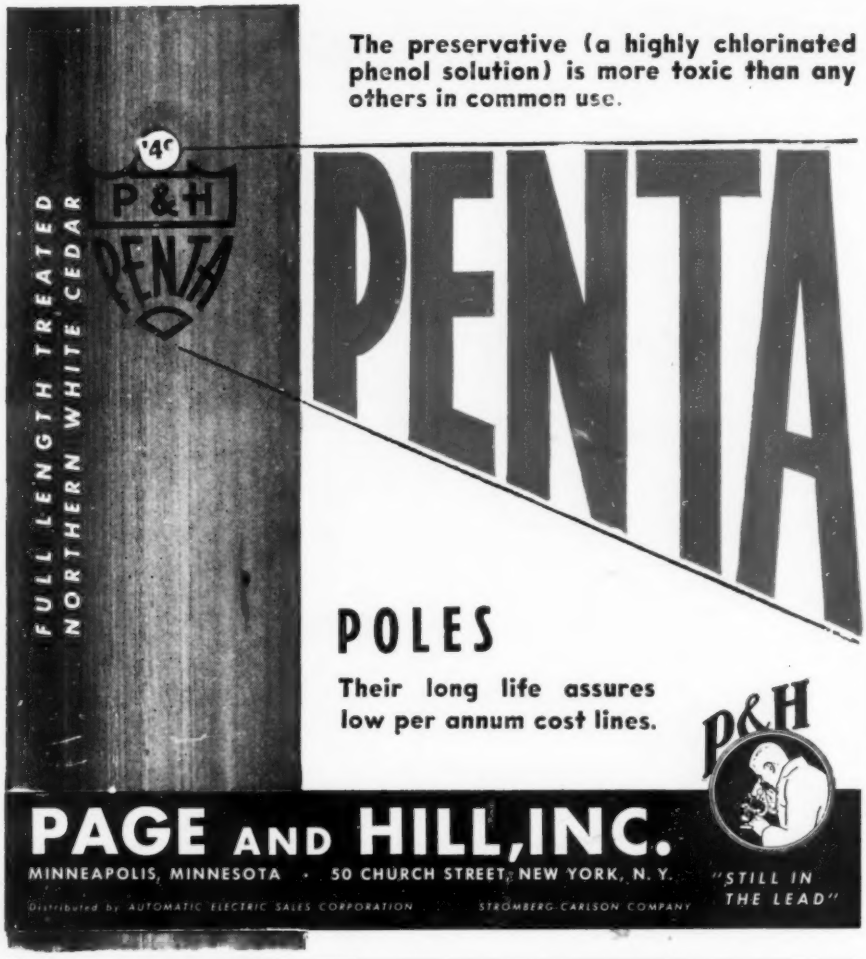

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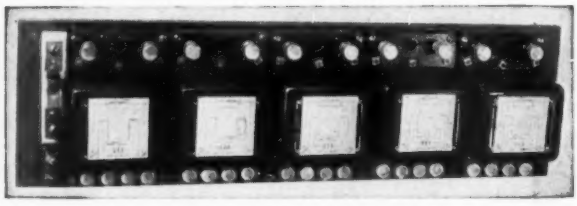

Many operating companies hesitate to install more magneto telephones because a conversion is planned. The answer is the use of Dan Mac Kick Coils with C. B. telephones providing C. B. service through a magneto switchboard. Many independent operating companies are happy with this solution to their problem.

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J. T. Naylor, vice president and general manager, Sunland-Tujunga Telephone Company.

president; Jean D. Weir, secretary; and F. G. Weir, treasurer, all of Sunland, California. Included among guests of the telephone company at a precutover dinner on Saturday, February 12 were H. F. Lello, vice president and general manager, Automatic Electric Co., Chicago, Ill.; Walter B. Wessells, telephone and telegraph engineer, Public Utilities Commission, State of California and other Public Utilities Commission Staff members; N. C. O. Brogger, assistant vice president, Bank of America, San Francisco, Calif.; K. D. Schwab, general commercial agent, The Pacific Telephone & Telegraph Co. and other officials of the Bell System. Automatic Electric Company was also represented at the cutover by M. C. Wiseman, installation department, and E. H. Swartz, operating engineer. The dinner party on the night of cutover was featured by dedicating the achievement to the employees of the Sunland-Tujunga Telephone Company and to the personnel of Automatic Electric Company and The Pacific Telephone & Telegraph Company who made possible the successful conversion.

Kellogg Switchboard & Supply Issues New Catalog

A new catalog of the complete line of communications equipment manufactured and sold by Kellogg Switchboard & Supply Co., Chicago, will be ready for distribution to Independent telephone companies in North America and customers in foreign countries about March 15, according to F. M. Parsons, sales manager.

The catalog is the product of 14

months work by the Kellogg advertising department in cooperation with the company's engineering, sales and manufacturing departments. Designated as General Catalog No. 11, it will be book-bound in bright red containing 304 pages. More than 1,000 illustrations are used and the edition is cross-indexed for quick reference to any item.

Listed in the catalog are all Kellogg manual and Relaymatic switchboards, Kellogg telephones and associated apparatus, component parts, voice repeaters, carrier systems and supply items ranging from telephone poles, batteries, wire and cable, to linemen's tools.

Acro Changes Name Elects New Board

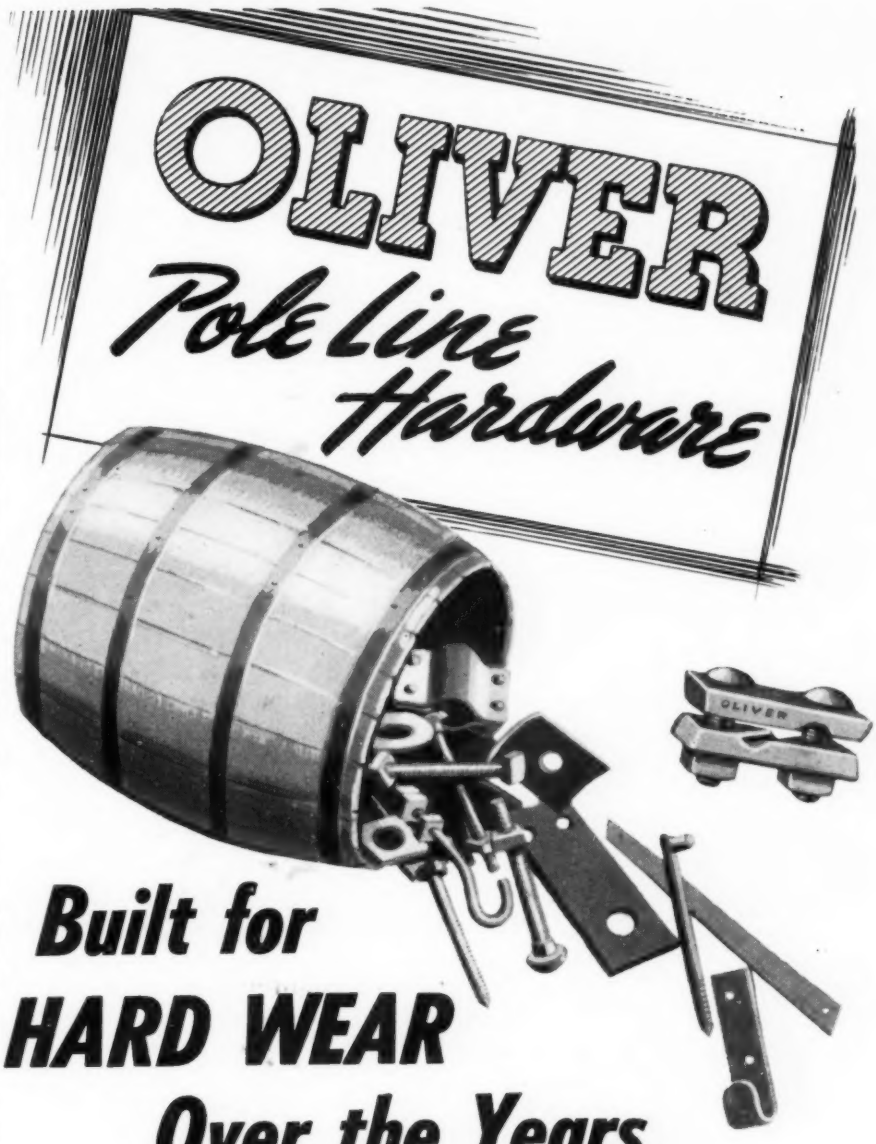
The Acro Electric Co., Cleveland, Ohio, has changed its name to The Acro Switch Co. New directors of the corporation are W. F. Rockwell, W. F. Rockwell, Jr., F. P. Maxwell, Arthur Kroeger and F. G. McCloskey.

Lenkurt Introduces New Type 33 Carrier System

Designed for simple convertibility, the new wire-line or radio-link Type 33 Carrier System of Lenkurt Electric Co. permits the installation of a single channel by itself and the later addition of one or two more channels as required. Type 33 channels can be stacked on existing single-channel systems of many types. Because it is primarily intended as short-haul equipment, emphasis has been put on minimizing cost—which is approximately $850.00 per channel per terminal—including signaling. This makes its installation economically feasible on lines as short as 10 miles.

Loop gain of a Type 33 terminal is 30 db which represents, in terms of normal operation, the spanning of distances up to 250 miles of wire line without repeaters. Systems can be extended by the use of repeaters which give 25-db gain and are also stackable so that each channel can be individually repeatered as required. Nominal transmitting level is plus 14 dbm. Minimum received level for a zero-db equivalent is minus 16 dbm. Either two- or four-wire operation can be used.

Modulation of a single-sided fully-suppressed-carrier type is employed for maximum utilization of spectrum space with minimum crosstalk. A separate full-duplex two-way signaling channel is included, which will



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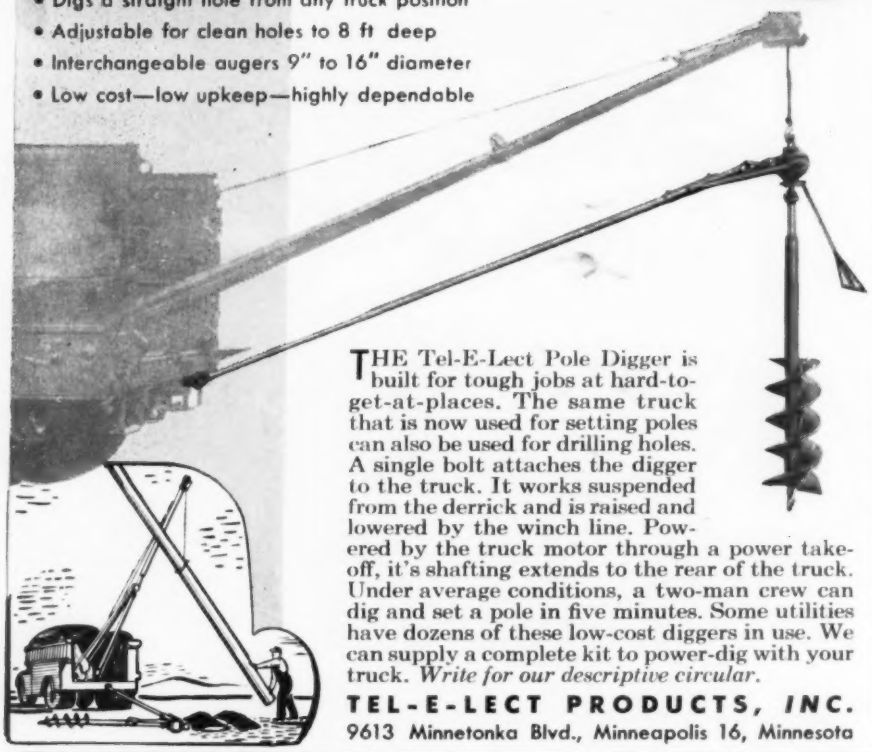

THE Tel-E-Lect Pole Digger is built for tough jobs at hard-to-get-at-places. The same truck that is now used for setting poles can also be used for drilling holes. A single bolt attaches the digger to the truck. It works suspended from the derrick and is raised and lowered by the winch line. Powered by the truck motor through a power take-off, it's shafting extends to the rear of the truck. Under average conditions, a two-man crew can dig and set a pole in five minutes. Some utilities have dozens of these low-cost diggers in use. We can supply a complete kit to power-dig with your truck. *Write for our descriptive circular.*

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operate over circuit attenuation as great as 40 db. Operation can be changed from ringdown to dialing by the replacement of plug-in relays. Pilot regulation, operating on an individual basis to compensate for attenuation changes, can be supplied.

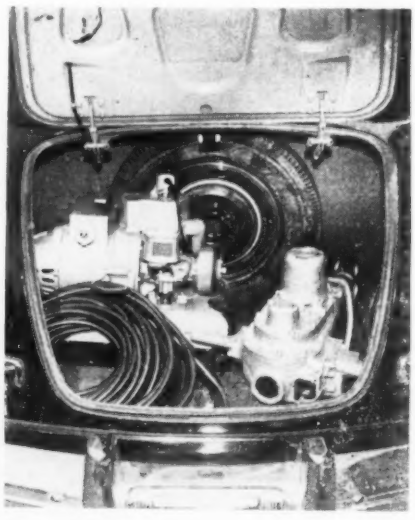
Additional features of the Type 33 include: High-efficiency filters using toroidal inductors; fully-balanced inert crystal modulator-demodulators; complete facilities for testing and maintenance; highly stable oscillators; and pre-shipment wiring and testing of systems as complete units. In the Independent telephone industry this equipment is distributed exclusively by Automatic Electric Sales Corp., Chicago 7, Illinois.

Electric Paving Breaker Developed by Homelite

The Homelite Corp., Port Chester, New York, has announced an entirely new type of paving breaker. Operated by electricity rather than by compressed air, this new 84-pound high-cycle breaker is claimed to hit a harder blow than the largest pneumatic breaker.

Electricity to operate this breaker is supplied by a 129-pound dual-voltage gasoline-engine-driven generator, which can be used for operating other types of high-cycle tools as well as standard 110-volt tools and floodlights.

As illustrated, both breaker and generator make a compact combination that can fit in the trunk of a car and can be put into operation quickly by one man in less time and with less trouble than believed possible. Also, it is stated that this new



New Homelite paving breaker makes a compact combination that can fit into trunk of a car.

New 84-pound, high-cycle breaker is operated by electricity supplied by a dual-voltage gasoline engine driven generator.

breaker is unaffected by dust or abrasive particles. The motor has no brushes or commutator to wear out. There is no electrical connection between rotor and stator and sealed ball bearings support the rotor shaft. A floating cylinder prevents the transmission of shock to the driving mechanism. Moreover, a positive plunger pump lubricator has an automatic switch which stops the breaker when its oil reservoir is empty and a smooth, flat-sided back rides comfortably on the operator's leg and makes the breaker easier to move and operate.

Although just introduced for general sales, the Homelite Corporation has had several experimental models of this new electric paving breaker in the field proving their efficiency under all types of conditions. Complete information about this new paving breaker, or an on-your-job demonstration, may be had by writing to Homelite Corp., Port Chester, New York, or direct from New Products' Editor, Telephone Engineer Publications, 7720 N. Sheridan Rd., Chicago 26, Ill.

A. B. Chance Co. Advances Harry O. Donnohue

Harry O. Donnohue, until recently a sales representative in Missouri and Arkansas for the A. B. Chance Company, Centralia, Mo., has been appointed general purchasing agent of the company. He assumed his new duties the first of the year.

Donnohue joined the Chance company in 1940 and was chief inspector in the Product Engineering division until he transferred to sales work last year.

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HELP WANTED: Experienced telephone lineman at once. Central Telephone Company, Clear Lake, South Dakota.

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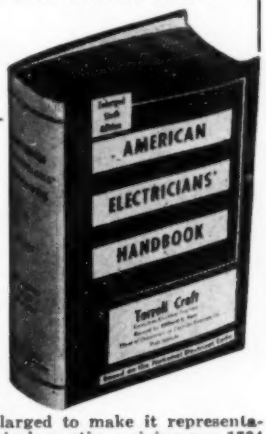

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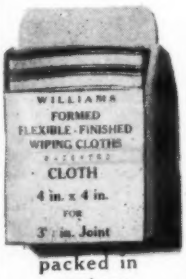

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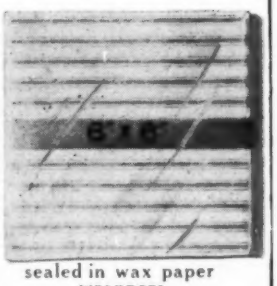

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The Oliver pins illustrated are made for use with standard insulators having 1-inch diameter pin hole. They are forged from high carbon open hearth steel, and hot dip galvanized. Wood cobs are of air-dried oak, boiled in paraffine.

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Kentucky Company Offers Installation Services

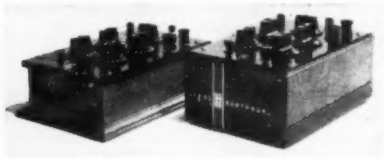
Telephone Installation Services, Louisville, Ky., organized in October, 1946, has announced that its installation and maintenance services are available to Independent telephone companies.

J. C. VANDINE

Telephone Installation Services is under the supervision of Joe C. Vandine, who has had many years' experience in both installation and maintenance of dial and manual equipment.

Sturdy New Metal Cases For L&N Lab Instruments

Pictured below is the Leeds & Northrup Enclosed Switch Wheatstone Bridge, before and after the redesign of its case. Not only more modern in appearance, the new metal case is



sturdier and better able to stand rough handling. Its grey baked enamel finish is hard and durable.

For years this instrument, like many others in L&N's laboratory line, has been mounted in a fine-grained, polished mohogany box. Adoption of a stronger, more modern design has been planned for some time, but had to be postponed because of the war. The first of the new-case instruments are now coming off the production line —and as quickly as engineering is completed, many other L&N bridges and potentiometers will change over to the new style.

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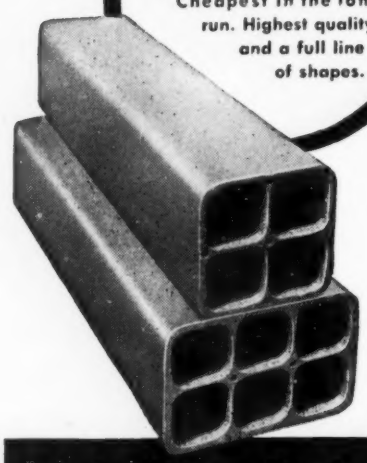
Cheapest in the long run. Highest quality and a full line of shapes.



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May be Used with Harmonic or Coded Bells

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THE BACK OF THE BOOK

By JOHN G. REYNOLDS
Managing Editor

California Claims 'Low Blow' . . . Sunland-Tujunga Telephone Co., is receiving "good natured ribbing" from California newspapers for choosing FLorida for its new dial exchange name. But despite cries of "heresy" and "traitor" over "unmentionable name of Florida" holding a key spot in a California telephone directory the Southern California telephone prefix pickers patiently explain that "the names themselves really don't mean much," the telephone instrument receives the two prefix letters only as digits. Or, rather, as electrical impulses. Thus, when the subscriber twirls out the FLorida prefix, the impersonal telephone would accept it not as F and L but as 3 and 5, to be followed by the remaining digits of the combination.

The explanation caused one California scribe to exclaim—"But Florida! Florida, that most provincial of all provincial regions, where they're still chortling over their local newspaper headlines concerning the recent discovery of, not serpents, in this Garden of Eden and tourist mecca, but snow. . . . FLorida, indeed!"

• • •

Kansas Subscribers Build Rural Line . . . Although it is a small line, farmers in the vicinity of Mt. Olive, Kansas, decided they wanted the line and to do "a good rebuilding job." Art Morford, an official of the farmer owned line, explains that all members or owners of telephones on the line cut poles from a neighbor's timber with the owner being reimbursed at an agreed price. When enough poles were cut the subscribers did the pole-setting job. All 13 members of the line either worked, sent someone in his place, or paid $5.00 per day for each day missed until the line was completely rebuilt. Each subscriber-owner was assessed $15. This money was used for purchasing poles and about five miles of new wire. After completion of the line, the Emmett (Kansas) Telephone Co. agreed to check all telephones and repair and maintain them.

Here's another case that deserves the "WELL DONE" compliment. Service on the line had been poor for several years. In deciding "to do a good job and to do it now", the subscribers have proved in another case of bringing good service to a rural area.

• • •

Miniature Telephone Maker Scores Hit . . . A couple of years ago, after scouring the town for a miniature telephone for his young sister's doll house, Stuart De Jong, 16, began to wonder if he couldn't make the instrument himself. It was a challenge. The more he thought about it, the more it intrigued him and he soon found himself at the telephone office requesting permission to manufacture the bantam-size books and phones. Using money earned from his paper route, he obtained special tools from Denver and soon began turning out in his basement workshop small telephones and telephone directories.

Stuart has registered a trademark, D-Tayl Toys by De Jong, and has applied for a patent on his plastic innovations. . . . and is already well started toward his plan of selling "a telephone to every doll house owner."

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PRESIDENT

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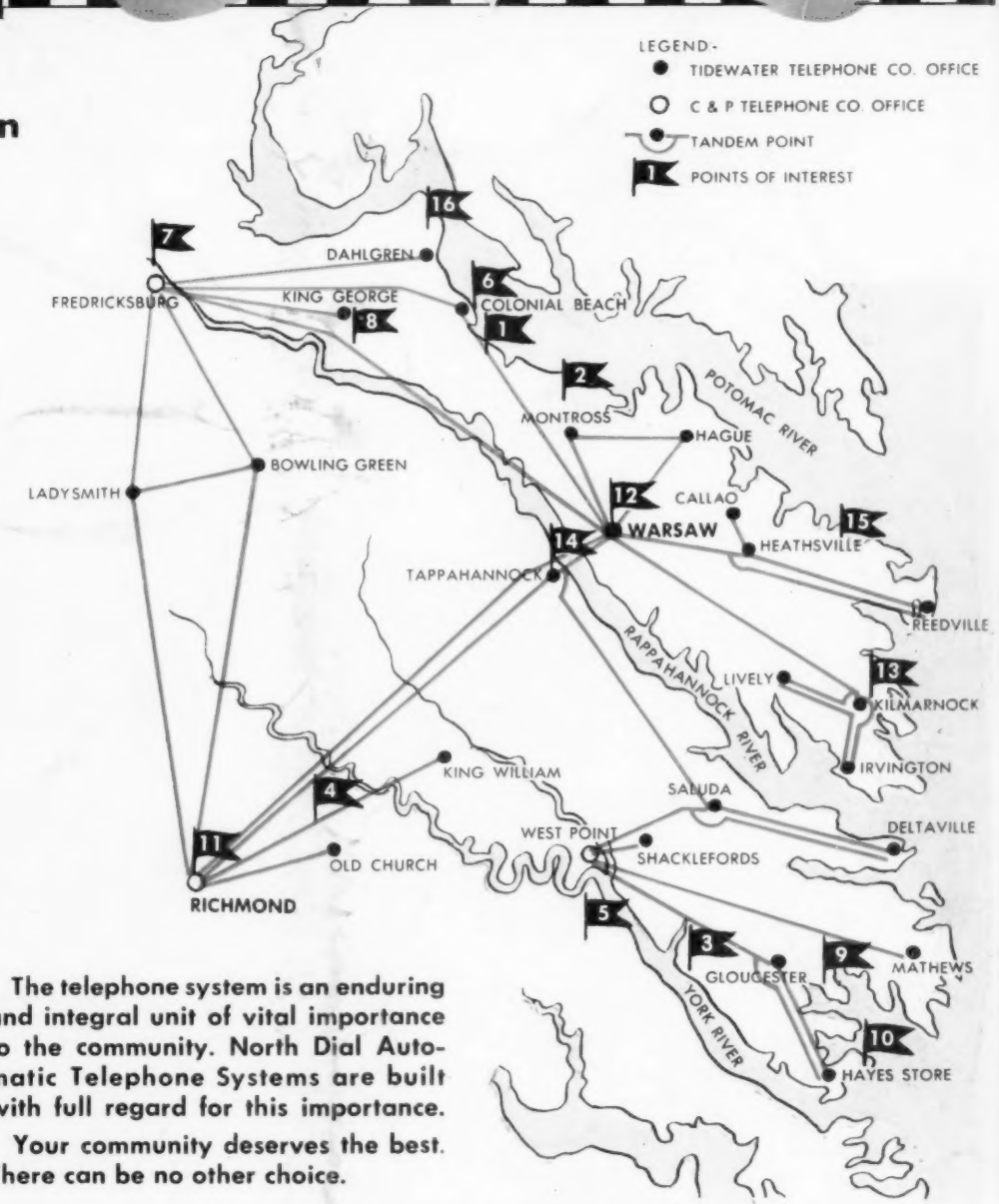
2. Birthplace of Robert E. Lee.
3. Captain John Smith's life saved by Pocahontas.
4. Birthplace of Patrick Henry.
5. Birthplace of Dr. Walter Reed.
6. Summer home of Alexander Graham Bell.
7. One of the most historic cities in America.
8. Birthplace of James Monroe, 5th president of the United States.
9. Abingdon Church attended by George Washington's grandmother.
10. Location of Cornwallis outpost in 1781.
11. Virginia State Capitol built on land purchased from Indian Chief Powhatan by John Smith in 1609.
12. Home office of the Tidewater Telephone Company.
13. "King" Carter's Church 1732.
14. 18th century Debtor's Prison.
15. Settled about 1648, area abounds with many colonial estates.
16. Dahlgren Naval Proving Ground.



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